

China Amiram, Bhimavaram, Andhra Pradesh- 534204

## **COLLABORATIVE ACTIVITIES 2018-2019**

## **INDEX**

S.No	Title of the Collaborating Activity	Name of the Collaborating Agency	Nature of the Activity	Page. No
1	Industry-Institute Interaction	Smart Health Global,Bangalore Contact:9945395370	Internship	6
2	Industry-Institute Interaction	Karvy Data Management Services Ltd, Contact:04033218029	Internship	7
3	Industry-Institute Interaction	APGENCO, Ibrahimpatnam,Contact:0866 288 2203	Internship	8
4	Industry-Institute Interaction	BSCPL Infrastructure Ltd, Hyderabad, Contact:040-23307704	Internship	9-12
5	Industry-Institute Interaction	Polavaram Irrigation Project, Davaleswaram,	Internship	13
6	Industry-Institute Interaction	APTIDCO, Rajahmundry, Contatct:040 2312 5555, 0866-2577600	Internship	14-15
7	Industry-Institute Interaction	APGENCO, Ibrahimpatnam,Contact:0866 288 2203	Internship	16
8	Industry-Institute Interaction	BSNL, Bhimavaram,Contact:08816290005.	Internship	17
9	Industry-Institute Interaction	ECIL, Hyderabad,Contact:040- 27182202	Internship	18-20
10	Industry-Institute Interaction	BSNL, Rajamundry, Contact:1800 180 1503	Internship	21
11	Industry-Institute Interaction	ECIL, Hyderabad, Contact:(011) 23219064-67	Internship	22-23
12	Industry-Institute Interaction	BHEL, Hyderabad,Contact:040- 23182227	Internship	24
13	Industry-Institute Interaction	Steel Plant, Visakhapatnam,Contact:08912518426	Internship	25
14	Industry-Institute Interaction	Hindustan Shipyardt, Visakhapatnam, Contact: 0891-2577404	Internship	26
15	Industry-Institute Interaction	ONGC, Rajahmundry,Contact:08832431570	Internship	27
16	Industry-Institute Interaction	Hexagon, Hyderabad, Contact:040 7103 5000	Internship	28



S.No	Title of the Collaborating Activity	Name of the Collaborating Agency	Nature of the Activity	Page. No
17	Industry-Institute Interaction	Valuelabs, Hyderabad, Contact:040 6623 9000	Internship	29
18	Industry-Institute Interaction	codemania, Contact:079895 64009	Internship	30
19	Industry-Institute Interaction	Cisco Systems India Pvt Ltd, Bengaluru,Contact:80 4159 3000	Internship	31
20	Industry-Institute Interaction	Royal Enfield, Chennai, Contact:044- 42230400	Internship	32
21	Industry-Institute Interaction	Steel Plant, Visakhapatnam,Contact:08912518426	Internship	33
22	Industry-Institute Interaction	South Central Railway, Secunderabad,Contact:0883 247 6111	Internship	34
23	Industry-Institute Interaction	APGENCO, Ibrahimpatnam,Contact:0866 288 2203	Internship	35-38
24	Industry-Institute Interaction	Sai Swarna Hyundai, Vijayawada, Contact:08662844777	Internship	39-41
25	Industry-Institute Interaction	Steel Plant internship, Visakhapatnam, Contact:08912518426	Internship	42
26	Industry-Institute Interaction	LiuGong India Pvt Ltd., New Delhi, Contact:1147272200	Internship	43
27	Industry-Institute Interaction	South Central Railway, Vijayawada, Contact:67904-2577314	Internship	44
28	Industry-Institute Interaction	MCR Web Solutions, Bhimavaram, Contact:9293940004	Internship	45
29	Industry-Institute Interaction	MCR Web Solutions, Bhimavaram, Contact:9293940004	Internship	46-54
30	Industry-Institute Interaction	MCR Web Solutions, Bhimavaram, Contact:9293940004	Internship	55
31	Industry-Institute Interaction	SRI MAHARSHI Consultancy, Bhimavaram	Internship	56-63
32	Industry-Institute Interaction	mRoads India Pvt. Ltd.,Hyderabad,Contact:9703388900	Internship	64
33	Industry-Institute Interaction	Tata Consultancy Services Limited,Hyderabad,Contact:9703388900	Internship	65
34	Industry-Institute Interaction	Bennett University, Contact:1800 103 8484	Internship	66-71



S.No	Title of the Collaborating Activity	Name of the Collaborating Agency	Nature of the Activity	Page. No
35	Institute- Institute Interaction	Daegu Gyengbuk Institute of Science & Technology, Korea	Sponsered Project Work	72-74
36	Institute- Institute Interaction	Ben-Gurion University of the Negev, Israel	Sponsered Project Work	75-78
37	Region Based Instance Document (RID) Approach Using Compression Features for Authorship Attribution	Department of CSE, Gokaraja Rangaraju Institute of Engineering and Technology, Hyderabad, India	Sharing of research facilities	79
38	Parallel String Matching with Linear Array, Butterfly and Divide and Conquer Models	Department of CSE, JNTUHCEJ, JNT University Hyderabad, Hyderabad, Telangana, India Rayalasheema University, Kurnool, Andhra Pradesh, India	Sharing of research facilities	80
39	Image denoising using wavelet transform based flower pollination algorithm	Department of Electronics and Communication Engineering, Raghu Institute of Technology, Visakhapatnam, India	Sharing of research facilities	81
40	Wide band sierpinski carpet rectangular microstrip fractal antenna using inset-fed for 5G applications	Department of Electronics and Communication Engineering, Andhra University College of Engineering (Autonomous), Visakhapatnam, Andhra Pradesh, India	Sharing of research facilities	82-89
41	A Multiband Slotted Log Periodic Dipole Array Antenna Design using Giuseppe Peano Fractal Geometry	Ramachandra College of Engineering, ECE Department, Eluru, 534007, India	Sharing of research facilities	90
42	A 50Ω CPW-FED Rhombus Shaped Patch Antenna Using Right-angled Isosceles Triangle Fractal	Ramachandra College of Engineering Eluru, Andhra Pradesh, India	Sharing of research facilities	91
43	Comparison of inset-fed rectangular and E-shaped antenna arrays for LTE & Wi- Fi applications	Department of Electronics and Communication Engineering, Andhra University, College of Engineering (A), Visakhapatnam, Andhra Pradesh, India	Sharing of research facilities	92
44	Design and analysis of compact circular half-ring monopole antenna with DGS	Department of Electronics and Communication Engineering, Andhra University, Visakhapatnam, Andhra Pradesh, India	Sharing of research facilities	93



S.No	Title of the Collaborating Activity	Name of the Collaborating Agency	Nature of the Activity	Page. No
45	Weighted Transformation and Wavelet Transforms-Based Image Resolution and Contrast Enhancement	ECE Department, COES, UPES, Dehradun, Uttarakhand, India	Sharing of research facilities	94
46	Arc-Shaped Monopole Liquid- Crystal Polymer Antenna for Triple-Band Applications	Department of ECE, K L University, Guntur, AP, India	Sharing of research facilities	95
47	A new watermarking scheme for medical images with patient's details	Department of Electronics and Communications Engineering, KoneruLakshmaiah Education Foundation, Vaddeswaram, Andhra Pradesh, 522502, India	Sharing of research facilities	96
48	A circular disk monopole ultra wide band antenna with triple band-notched characteristics	Department of E.C.E, Koneru Lakshmaiah Education foundation, Guntur, Vaddeswaram, AP, India	Sharing of research facilities	97
49	Power Flow Analysis of Three Phase Unbalanced Radial Distribution Networks with Multiple DGs	Anil Neerukonda Institute of Technology & Science, Visakhapatnam	Sharing of research facilities	98
50	A novel multilevel inverter configuration with reduced components	Electrical Department, AU College of Engineering, Visakhapatnam, India	Sharing of research facilities	99
52	A modified reverse voltage inverter topology with inverted sine wave carrier PWM technique	Department of Electrical Engineering, VNIT, Nagpur, India	Sharing of research facilities	100
53	A fault tolerant cascaded multilevel inverter topology for open circuit faults in switches	Department of Electrical Engineering, VNIT, Nagpur, India	Sharing of research facilities	101
54	A modified three phase 5-level symmetrical multilevel inverter topology	Department of Electrical Engineering, Visvesvaraya National Institute of Technology, Nagpur, India	Sharing of research facilities	102
55	Fault tolerant operation of CHB multilevel inverters based on the SVM technique using an auxiliary unit	Depatrment of Electrical Engineering, Visvesvaraya National Institute of Technology (VNIT), Nagpur, India	Sharing of research facilities	103
56	Implementation of fuzzy logic controller in three area multi source LFC system(Article)	Department of Electrical and Electronics Engineering, AITAM College of Engineering, Tekkali.A P532201, India	Sharing of research facilities	104



S.No	Title of the Collaborating Activity	Name of the Collaborating Agency	Nature of the Activity	Page. No
57	A DFT-ED based approach for detection and classification of faults in electric power transmission networks	Indian Institute of Technology (IIT- ISM) Dhanbad	Sharing of research facilities	105
58	Frequency control of an isolated power system considering mutual effects of AGC in presence of energy storage units	National Institute of Technology (NIT) Warangal	Sharing of research facilities	106
59	Medical Image Segmentation Based On Generalized Gamma Distribution for Effective Identification of Diseases in Brain	Department of CS&SE, Andhra University, Visakhapatnam, Andhra Pradesh, India.	Sharing of research facilities	107
60	Diff isomiRs: Large-scale detection of differential isomiRs for understanding non- coding regulated stress omics in plants	Key Laboratory of Plant Resources Conservation and Germplasm Innovation in Mountainous Region	Sharing of research facilities	108
61	Plant IsomiR Atlas: Large Scale Detection, Profiling, and Target Repertoire of IsomiRs in Plants.	Key Laboratory of Plant Resources Conservation and Germplasm Innovation in Mountainous Region	Sharing of research facilities	109
62	Research Activity	Annamalia University	Sharing of research facilities	110
63	Research Activity	Annamalia University	Sharing of research facilities	111
64	Research Activity	Annamalia University	Sharing of research facilities	112
65	Research Activity	Annamalia University	Sharing of research facilities	113

27 - 315175711145

Sincert Health Global Health Care Solutions Carbon Health Care Solutions

April 29, 2019

#### Sub: Certificate of Experience

This is to certify that <mark>Mr Nitin Murugan</mark> has done internship at Smart Health Global Com Dac 23, 2018 to Apr 29, 2019 on 'Smart Vein Finder' under guidance of Mr Famu Muthangi.

via have found him to be a self-starter who is motivated, duty bound and naroworking

He worked sincerely on his assignments and her performance was Par Excellence

Yours faithfully, For Smart Health Global,

SRIDE

Ramu Muthangi CEO

Smart Health Global - Highorinet Sisiness Centre, 17A, Church Street, Eangalore - 560001 Mont - Connects 91370, Empile direju@chartheaithglobal.in

315175711093



## TO WHOMSOEVER IT MAY CONCERN

## Internship Certificate

This is to certify that Ms. M Akhila, a student of SRKR Engineering College in IT (Information Technology) branch had enrolled as an Intern for a period of 4 weeks starting 14th May 2018, in the IT division at Karvy Data Management Services Limited, to work and learn along with the software development team.

During this course she was familiarized with Java, Spring and Hibernate. In addition, she was exposed to Testing concepts.

During this course she was found hard working and self-motivated. She worked sincerely on her assignments and her performance was Good.

## For Karvy Data Management Services Limited

1.2018

Sreenivasa Reddy Inukollu

Vice President, IT

#### Karvy Data Management Services Limited

Corporate Office: 'Karvy Millennium', Piot No. 31 & 32 Nanakramguda, Financial District, Gachibowli, Hyderabad - 500 032, Telangana, T. +91 40 3321 1500 ( F. +91 40 3321 8029

Registered Office: Karvy House, 46, Avenue 4, Street No.1, Bactara Hills, Hyderabad - 500 034, Telangana T: +91 40 2331 2454 / 4467 7400 L F: +91 40 2331 1968

chevice Bitary com / www.karvy.com / http://kdms.in/ / CIN No U72300TG2008PLC058738



## **CERTIFICATE**

This is to certify that Sri Tadikonda Sai Teja (160106247) from S.R.KR. Engineering College, Bhimavaram has successfully completed 2 weeks of Industrial Training as Industry Attachment/Internship at Dr. Narla Tatarao Thermal Power Station, APGENCO Ltd., for a period of 15 days (17-05-2018 to 31-05-2018). His performance is found satisfactory during the above period.

> MSVLD 1618 DIVISIONAL ENGINEER, BOILER MAINTENANCE, STG.III, Dr.NTTPS, IBRAHIMPATNAM. Divisional Engineer Boller Maintenarice Stage - III. Dr. NTTPS IBRAHIMPAINAM-521456



## TO WHOMSOEVER IT MAY CONCERN

\*

This is to certify that Mr. G Leela Premchand, B.Tech Civil (2<sup>nd</sup> Year 2<sup>nd</sup> Semester) student of SRKR Engineering College, Bhimavaram with Roll No: 160101045 has successfully completed his Internship Project at our CRDA Project, Amaravathi from 10-05-2018 to 07-06- 2018.

**BSCPL Infrastructure Limited** 

20

D BRORDS V Jagadeesh R. Chief General Manager

BSCPL Infrastructure Ltd. CIN : U45203AP1998PLC029154 # 8-2-502/1/A, JIVI Towers, Road No.7, Banjara Hills, Hyderabad - 500 034. Tel : +91 40 2330 7704, 2330 7831, 2330 3663 Fax : +91 40 2330 7385 Email : info@bscpl.net Web : www.bscpl.net





## TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. A Venkata Krishna, B.Tech Civil (2<sup>nd</sup> Year 2<sup>nd</sup> Semester) student of SRKR Engineering College, Bhimavaram with Roll No: 160101008 has successfully completed his Internship Project at our CRDA Project, Amaravathi from 10-05-2018 to 07-06- 2018.

#### **BSCPL Infrastructure Limited**

CA 644.8 V Jagadeesh Chief General Manager RC

BSCPL Infrastructure Ltd. CIN : U45203AP1998PLC029154

# 8-2-502/1/A, JIVI Towers, Road No.7, Banjara Hills, Hyderabad - 500 034. Tel : +91 40 2330 7704, 2330 7831, 2330 3663 Fax : +91 40 2330 7385 Email : info@bscpl.net Web : www.bscpl.net





## TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. G Manoj Venkateswarlu, B.Tech Civil (2<sup>nd</sup> Year 2<sup>nd</sup> Semester) student of SRKR Engineering College, Bhimavaram with Roll No: 160101055 has successfully completed his Internship Project at our CRDA-Project Amaravathi from 10-05-2018 to 07-06- 2018.

**BSCPL Infrastructure Limited** 

**V** Jagadeesh Chief General Manager

BSCPL Infrastructure Ltd. CIN: U45203AP1998PLC029154



# 8-2-502/1/A, JIVI Towers, Road No.7, Banjara Hills, Hyderabad - 500 034. Tel : +91 40 2330 7704, 2330 7831, 2330 3663 Fax Pag@1140 2330 7385 Email : info@bscpl.net Web : www.bscpl.net



## TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. Ch Surya Prakash, B.Tech Civil (2<sup>nd</sup> Year 2<sup>nd</sup> Semester) student of SRKR Engineering College, Bhimavaram with Roll No: 160101029 has successfully completed his Internship Project at our CRDA-Project Amaravathi from 10-05-2018 to 07-06- 2018.

**BSCPL Infrastructure Limited** 

0 494444 V Jagadeesh Chief General Manager

BSCPL Infrastructure Ltd. CIN : U45203AP1998PLC029154

# 8-2-502/1/A, JIVI Towers, Road No.7, Banjara Hills, Hyderabad - 500 034. Tel : +91 40 2330 7704, 2330 7831, 2330 3663 Fax : phgel140 2330 7385 Email : info@bscpl.net Web : www.bscpl.net



## GOVERNMENT OF ANDHRA PRADESH WATER RESOURCES DEPARTMENT

CONTRACTOR OF A CO

×

POLAVARAM IRRIGATION PROJECT HEAD WORKS CIRCLE DOWLAISWARAM - 533125, EAST GODAVARI DISTRICT



# CERTIFICATE

This is to certify that *M.Yeswanth Sai bearing Roll No. 160301031* of *Civil Engineering* student has participated in the Internship allotted by Department of Civil Engineering of S.R.K.R Engineering College, Bhimavaram to *POLAVARAM IRRIGATION PROJECT HEAD WORKS CIRCLE* from 7<sup>th</sup> May-2018 to 5<sup>th</sup> June-2018.

During the above training period his/her performance and Conduct is

Page 13

......Solidtastasy.



DEPUTY SUPERINTENDING ENGINEER, P.IP. HEAD WORKS CIRCLE, DOWLAISWARAM.

# NCC

## NCC/HO-HR/PROJ-TNG-2018-2019

Date: 30.08.2018

## INTERNSHIP CERTIFICATE

×

This is to certify that Mr. M Prudviraj studying B Tech (Civil Engineering), in SRKR Engg College - Bhimavaram, vide Registration No. 160101100, successfully completed his internship with us at our APTIDCO Rajahmundry, during the period from 30 May 2018 to 13 Jun 2018.

**KASP** Rao

In Consultant (HR) NCC



#### NCC/HO-HR/PROJ-TNG-2018-2019

Date: 30.08.2018

#### INTERNSHIP CERTIFICATE

\*

This is to certify that Mr. R Anjaneyulu studying B Tech (Civil Engineering), in SRKR Engg College - Bhimavaram, vide Registration No. 160101150, successfully completed his internship with us at our APTIDCO Rajahmundry, during the period from 30 May 2018 to 13 Jun 2018.

**KASP** Rao

onsultant(HR) NCC ABA

NCC Limited (Ferniery Nagarjuna Construction Company Limited) CIN: L72200AP1990PLC011146 NCC House, Madhapur, Hyderabad 500 081 T+91 40 2326 8888 F+91 40 2312 5555 ncclimited.com



#### **CERTIFICATE**

This is to certify that Sri Shaik Riyaz Ahamed (160106235) from S.R.KR. Engineering College, Bhimavaram has successfully completed 2 weeks of Industrial Training as Industry Attachment/Internship at Dr. Narla Tatarao Thermal Power Station, APGENCO Ltd., for a period of 15 days (17-05-2018 to 31-05-2018). His performance is found satisfactory during the above period.

and the second	理 1			ECE -	160/03/10
LA FROM DEPARTM	E-bri				11 10 10 10 10 10 10 10 10 10 10 10 10 1
		Contraction of the local division of the loc			
	To be the second	N	and the second second		
		BSNI			
		Connecting India			
All and a second	BHARAT SA	ANCHAR NI	GAM LIM	ITED	
	(A Gov	ernment of India I	Enterprise)		
- Charles	O/o. GENERAL MA	NAGER TELECOM DISTRICT, GN	IT ROAD, ELURU - 534 002	2	
		CERTIFICAT	E		
This is to	o certify that Miss/Mr.	Kolli Lokst	mi Manain	a	and the second
Roll No.	160103110	, a student of _	S.R.K.R.E	nginuri	NB_
_Colle	ge, Bhimanara	has und	dergone In-plant	Training Con	urse in
	Teleci	om Technologie	8		
from	05-06-2018	to	-06-2018		
The stude	ent has successfully co	mpleted the Training	Course.		
Date : Station :	11-6-18 Buimowaram.		Gene West Goday Elur	Manager ari Felecom D u - 534 002	istrict



इलेक्ट्रानिक्स कारपोरेशन आफ इण्डिया लिमिटेड Electronics Corporation of India Limited CIN U32100TG1967GOI001149 (भारत सरकार का उद्यम) / (A Govt. of India Enterprise) कम्प्यूटर शिक्षा प्रभाग / COMPUTER EDUCATION DIVISION



## **PROJECT / INTERNSHIP COMPLETION CERTIFICATE**

Date: 25/07/2019

This is to certify that Mr. M. RAJA bearing Reg.No:17B91A04D7 a student of SAGI RAMAKRISHNAM RAJU ENGINEERING COLLEGE, BHIMAVARAM pursuing the Degree of B.Tech., in Electronics and Communication Engineering, has carried out Project work / Internship titled "MICROCONTROLLER BASED HOME SECURITY SYSTEM USING WIRELESS ALERTS" in "EMBEDDED SYSTEMS" under our guidance during the period from 13/05/2019 to 12/06/2019 in partial fulfillment of the requirements for the award of the above mentioned Degree. The student is punctual, hardworking and shown keen interest to produce the project output and results.

unity

SRIDHARA SHETTY

AGM: CED

SRIDHARA SHETTY AGM, CED ECIL, HYDERABAD-500 062



अतिथि गृह काम्प्लेकस, ई सी आई एल, हैदराबाद, तेलंगाण, भारत. Guest House Complex, ECIL, Hyderabad - 500 062. T.S., INDIA. दूरभाष / Tel. 2712 5864, 2712 2816, टेली फैक्स / Tele Fax : +91-040-2712 6017 वेब साइट / Web Site : www.ecil.co.in, ई-मेल / E-mail : headced@ecil.co.in



इलेक्ट्रानिक्स कारपोरेशन आफ इण्डिया लिमिटेड Electronics Corporation of India Limited CIN U32100TG1967GOI001149 (भारत सरकार का उद्यम) / (A Govt of India Enterprise) कम्प्यूटर शिक्षा प्रभूग / COMPUTER EDUCATION DIVISION



## PROJECT / INTERNSHIP COMPLETION CERTIFICATE

Date: 25/07/2019

ELE

This is to certify that Mr. K. SUDHEER BABU bearing Reg.No:17B91A04A7 a student of SAGI RAMAKRISHNAM RAJU ENGINEERING COLLEGE, BHIMAVARAM pursuing the Degree of B.Tech., in Electronics and Communication Engineering, has carried out Project work / Internship titled "MICROCONTROLLER BASED HOME SECURITY SYSTEM USING WIRELESS ALERTS" in "EMBEDDED SYSTEMS" under our guidance during the period from 13/05/2019 to 12/06/2019 in partial fulfillment of the requirements for the award of the above mentioned Degree. The student is punctual, hardworking and shown keen interest to produce the project output and results.

SRIDHARA SHETTY

AGM: CED SRIDHARA SHETTY AGM, CED ECIL, HYDERABAD-500 062



अतिथि गृह काम्प्लेकम, ई मी आई एल, हैदराबाद, तेलंगाण, भारत. Guest House Complex, ECIL, Hyderabad - 500 062 T.S., INDIA. दूरभाष / Tel. 2712 5864, 2712 2816, टेली फैक्म / Tele Fax +91-040-2712 6017 वेब साइट / Web Site : www.ecil.co.in, ई-मेल / E-mail : headced@ecil.co.in

Page 19



इलेक्ट्रानिक्स कारपोरेशन आफ इण्डिया लिमिटेड Electronics Corporation of India Limited CIN U32100TG1967GOI001149 (भारत सरकार का उद्यम) / (A Govt. of India Enterprise) कम्प्यूटर शिक्षा प्रभाग / COMPUTER EDUCATION DIVISION



#### **PROJECT / INTERNSHIP COMPLETION CERTIFICATE**

Date: 25/07/2019

FIE

This is to certify that Mr. K. HARISH bearing Reg.No:17B91A04C1 a student of SAGI RAMAKRISHNAM RAJU ENGINEERING COLLEGE, BHIMAVARAM pursuing the Degree of B.Tech., in Electronics and Communication Engineering, has carried out Project work / Internship titled "MICROCONTROLLER BASED HOME SECURITY SYSTEM USING WIRELESS ALERTS" in "EMBEDDED SYSTEMS" under our guidance during the period from 13/05/2019 to 12/06/2019 in partial fulfilment of the requirements for the award of the above mentioned Degree. The student is punctual, hardworking and shown keen interest to produce the project output and results.

SRIDHARA SHETTY

AGM: CED SRIDHARA SHETTY AGM, CED ECIL, HYDERABAD-500 062



अतिथि गृह काम्प्लेकस, ई सी आई एल, हैदराबाद, तेलंगाण, भारत. Guest House Complex, ECIL, Hyderabad - 500 062. T.S., INDIA. दूरभाष / Tel. 2712 5864, 2712 2816, टेली फैक्स / Tele Fax : +91-040-2712 6017 वेब साइट / Web Site : www.ecil.co.in, ई-मेल / E-mail : headced@ecil.co.in

Scanned with CamScanner

ECE - 160103036





इलेक्ट्रानिक्स कारपोरेशन आफ इण्डिया लिमिटेड Electronics Corporation of India Limited CIN U32100TG1967GOI001149 (भारत सरकार का उद्यम) / (A Govt. of India Enterprise) कम्प्युटर शिक्षा प्रभाग / COMPUTER EDUCATION DIVISION



### PROJECT / INTERNSHIP COMPLETION CERTIFICATE

Date: 25/07/2019

This is to certify that Mr. R. PRANEETH bearing Reg.No:17B91A04I9 a student of SAGI RAMAKRISHANAM RAJU ENGINEERING COLLEGE, BHIMAVARAM pursuing the Degree of B.Tech., in Electronics and Communication Engineering, has carried out Project work / Internship titled "SECURED SMART HEALTH CARE MONITORING SYSTEM" in "EMBEDDED SYSTEMS" under our guidance during the period from 20/05/2019 to 19/06/2019 in partial fulfillment of the requirements for the award of the above mentioned Degree. The student is punctual, hardworking and shown keen interest to produce the project output and results.

SRIDHARA SHETTY

AGM: CED SRIDHARA SHETTY AGM, CED ECIL, HYDERABAD-500 062



अतिथि गृह काम्प्लेकस, ई सी आई एल, हैदराबाद, तेलंगाण, भारत. Guest House Complex, ECIL, Hyderabad - 500 062. T.S., INDIA. दूरभाष / Tel. 2712 5864, 2712 2816, टेली फैक्स / Tele Fax : +91-040-2712 6017 वेब साइट / Web Site : www.ecil.co.in, ई-मेल / E-mail : headced@ecil.co.in



इलेक्ट्रानिक्स कारपोरेशन आफ इण्डिया लिमिटेड Electronics Corporation of India Limited CIN U32100TG1967GOI001149 (भारत सरकार का उद्यम) / (A Govt. of India Enterprise) कम्प्युटर शिक्षा प्रभाग / COMPUTER EDUCATION DIVISION



004824

#### PROJECT / INTERNSHIP COMPLETION CERTIFICATE

Date: 25/07/2019

This is to certify that Mr. N. MADHU bearing Reg.No:17B91A04G1 a student of SAGI RAMAKRISHANAM RAJU ENGINEERING COLLEGE, BHIMAVARAM pursuing the Degree of B.Tech., in Electronics and Communication Engineering, has carried out Project work / Internship titled "SECURED SMART HEALTH CARE MONITORING SYSTEM" in "EMBEDDED SYSTEMS" under our guidance during the period from 20/05/2019 to 19/06/2019 in partial fulfillment of the requirements for the award of the above mentioned Degree. The student is punctual, hardworking and shown keen interest to produce the project output and results.

SRIDHARA SHETTY

AGM: CED

SRIDHARA SHETTY AGM, CED ECIL, HYDERABAD-500 062



अतिथि गृह काम्प्लेकस, ई सी आई एल, हैदराबाद, तेलंगाण, भारत. Guest House Complex, ECIL, Hyderabad - 500 062. T.S., INDIA. दूरभाष / Tel. 2712 5864, 2712 2816, टेली फैक्स / Tele Fax : +91-040-2712 6017 वेब साइट / Web Site : www.ecil.co.in, ई-मेल / E-mail : headced@ecil.co.in



भारत हैवी इलेक्ट्रिकल्स लिमिटेड रामचंद्रापुरम, हैदराबाद मानव संसाधन विकास केंद्र



1=115

BHARAT HEAVY ELECTRICALS LIMITED RAMACHANDRAPURAM, HYDERABAD-502032 Human Resource Development Centre

Ref No: 19ENG61816/3

Date : 04/06/2019

## TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr./Ms./Mrs. BURA SRI HARSHA SAMUEL KIRAN

with college id no: 160103033

Studying in \_\_\_\_\_ STR. K. R. ENGINEERING COLLEGE

pursuing B.E/B. Tech/MBA in \_\_\_\_\_ECE

discipline had undergone project training from \_\_\_\_\_2/ [05/2019

to 04/06/2019 . The title of the project as per our records is

POWER PLANT AND IT'S CONTROL SYSTEM

ject training in

A KRISHMA REAL

The second second second

राष्ट्रीय इस्पात निगम लिमिटेड Rashtriya Ispat Nigam Limited विशाखपट्टणम इस्पात संयंत्र Visakhapatnam Steel Plant तकनीकी प्रशिक्षण केन्द्र Technical Training Institute विशाखपट्टणम Visakhapatnam-530031 प्रमाण पत्र CERTIFICATE No. 06499 S1901TN03846-0260 0006499 प्रामाणित किया जाता है कि श्री/This is to certify that VADDI BHARGAV Mr./Ms. a student of III/B TECH/ECE (वर्ष/पाठ्यक्रम/शाखा Year/Course/Branch/\_ विध्यार्थी ने from SRKR ENGINEERING COLLEGE, BHIMAVARAM से INTERNSHIP has undergone प्रशिक्षण training विशाखपट्टणम इस्पात संयंत्र TELECOMMUNICATIONS के at Visakhapatnam Steel Plant in 15/06/2019 तक प्राप्त किया। विभागों में depts. from दि 03/06/2019 से to परियोजना शीर्षक The project title is\_ है। प्रशिक्षण अवधि में उनका आचरण His/Her conduct during the period of training is GOOD है। रथल/Place : Visakhapatnam (mas 0 प्रक्षिण समन्वयक के हस्ताक्षर मोहर के साथ। दि/Date 15/06/2019 Signature of Training Co-Ordinator with Seal णे. प्रभावर राव-J. PRABHAKARA RAO प्रबंधक (प्रशिक्षण) - Manager (१९९.) तकनीकी प्रशिक्षण संस्थान Technical Training Institute आर आई एन एल,विशाखपट्टणम इस्पात संयेव RINL, Visakhapatnam Steel Plant विशाखगट्टणम-Visakhapatnam-530 031 Page 25

EFE - 160104236

Hindustan Shipyard Ltd. (A Govt of India Undertaking) Gandhigram VISAKHAPATNAM - 530 005 (INDIA) (An ISO - 9001:2008 Company)



हिन्दुस्तान शिपयार्ड लिमिटेड (भारत सरकार का उपक्रम) गांधीग्राम विशाखपट्टणम - 530 005 (भारत) (आई.एस.ओ. - 9001:2008 कंपनी)

Ref: T&D/ 364/19

Date: 29-05-2019

# CERTIFICATE

This is to certify that Ms. BUNGA DIVYA SRI (photograph is affixed below) is daughter of Sri B.YESURATNAM studying B.E in ELECTRICAL & ELECTRONICS ENGINEERING III Year in S.R.K.R.ENGINEERING COLLEGE BHIMAVARAM, has undergone Internship in YARD ELECTRICAL DEPARTMENT from 17-05-2019 TO 29-05-2019 .His / Her conduct during the above period was found to be GOOD.



Fer COUSTAN SHIPYARD LTD

ager (Training

ISO 5001 : 2008 APPROVED BY IROS IROS IROS

Registered Office : Gandhigram, Gandhigram Post Office, Visakhapatnam - 530 005. (A. P.) Fax : (+91-891) 2577502, 2577356, 2577667 (DD&SR), 2577038(EKM) Web: www.hsl.gov.in, www.hsl.nic.in CIN : U74899AP1952G01076711

Page 26

FEB - 160104182



GRG!

No.

STI

Dt20/01/20

## आयल एण्ड नेचुरल गैस कॉरपोरेशन लिमिटेड

जोदावरी भवन, बेस काम्पेक्स, राजमंड्री परिसम्पत्ति / के.जी. बेसिन, राजमंड्री - 533 106 (आं.प्र.)

#### Oil and Natural Gas Corporation Limited Godavari Bhavan, Base Complex, Rajahmundry Asset / K.G. Basin Rajahmundry - 533 106 (A.P.) Phones : 0883-2431570-85, Fax : 0883-2427788 Grams : COMONG

#### STAFF TRAINING INSTITUTE RAJAHMUNDRY

NO: RJY/STI/PW/428/2019-20

Date: 20.01.2020

## INTERNSHIP COMPLETION CERTIFICATE

This is to certify that Mr. Saladi Venkata Satya Bharani, a student of B.Tech(EEE), at SRKR Engineering College, Bhimavaram, has successfully completed internship at ONGC, Rajahmundry, on "AN OVERVIEW OF MAINTENANCE OF ELECTRICAL EQUIPMENTS DURING THE OPERATIONS OF DRILLING RIGS/INSTALLATIONS" under the guidance of Shri. J.K.Toppo, GM(E), ONGC, Rajahmundry.

During the internship he took keen interest in the assigned work. We wish him all success in his future academic endeavours and life.

(G Sriram

Staff Training Institute ONGC, Rajahmundry. G.SRIRAM SR. HR EXECUTIVE-STI ONGC, RAJAHMUNDRY

Regd Office : Jeevan Bharati Bldg., Tower-II, 9th Floor, 124 - Indira Chowk, New Delhi-110001 (India) Phone + 90 - 11 - 23314610 Fax + 91 - 11 - 23737971 Page 27



Hexagon Capability Center India 5 Onvasree Trinity Campus, HITEC City, Made an Hyderabau - 500 031, India, T: 491 40 300 - 11 www.nexagor CIN: U72200TG1987PTC012464

25th April 2019

#### TO WHOM SO EVER IT MAY CONCERN

The wish to confirm that Mr. Srikanth KONIDENA, Roll No: 315175711074, who is presently pursuing his B Tech in Information Technology from SRKR Engineering college, has completed his internship from Dec 3<sup>rd</sup>, 2019 to April 19<sup>th</sup>, 2019.

During this internship, he worked on the following project using Python, Django REST F/w, Elasticsearch and SQL Server.

GO implement

Objectives of this project is to help PPM Global Service Council members to easy out their day to day operations with a web application which provides

- Knowledge Management
- Project Management
- Resource Management
- Workflows
- Notification
- Dashboards

Srikanth has shown his great attention in learning the technologies like Elasticsearch, Python, and Django REST Framework and provided various best possible solutions to meet the product requirements by having continuous discussion with the team. He worked on Knowledge management module and developed Machine learning algorithm and contributed in building application search functionality with Elasticsearch. He is a very bright and qualified individual and is a pleasure to work with him. He is well versed with the object-oriented programming skills to best use with utmost dedication. He is an excellent team player, participated in discussions with the team members in reaching the goals.

We wish him all the very best in his pursuit for excellence and future endeavours.

for Hexagon Capability Center India Pvt. Ltd.,

Kuman

Manoi PATLOORI Sr. Manager - Human Resources

Ashwini Kumar S

Sr. Manager Technical, PPM Services

一個





() 有人有人的人的人

ValueLabs Solutions LLP He(5 Bullion) Process Intoday Public IT/TES Species Economic Zone Hilleon Care Solution and Company Secondarial Processed Species

February 28, 2019

#### TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Greeshma Sree Parimi has completed her internship in our company from December 03, 2018 till February 28, 2019.

She has done her Internship in Software Development.

Project Title - VLAP.

Greeshma is a quick learner and an enthusiastic team member. We wish her all the nest in her future endeavors.

fours faithfully,

for ValueLabs Solutions LLP

Prashant Koman Ayavari VP - HR & Operations



FIFIN CHANDRA NAMBURU

Date of Achievement: 05-06-2019 Certification No.: cdmn22



Rahufsirgh

RAHUL SINGH CEO, CODEMANIA



1 T - 16010 5066

Cisco Systems (India) Private Limited SEZ Unit, Cessna Business Park, Kadubeesanahalli Village Varthur Hobli, Sarjapur Marathalli Outer Ring Road Bangalore, Kamataka 560103 CIN: U31909KA1995PTC019505 India

11th Aug 2019

## TO WHOMSOEVER IT MAY CONCERN

This is to confirm that Kavya Sri Javvaji has completed an internship project in our organization during the period May 20, 2019 to July 12, 2019. During the internship, Kavya Sri Javvaji was given a project named "Monitoring and Troubleshooting for Site-to-Site VPN " which comprised of the following activities detailed below. "Monitoring and Troubleshooting for Site-to-Site VPN" is an application which adds troubleshooting and monitoring capabilities to Site to Site VPN configurations in Cisco's Firepower Management Center<sup>™</sup> and Mr. Satkar Singh was the internship guide for this project.

- Understanding the security domain and the problem statement.
- Architecture and High-level design.
- Implementation of the solution using libraries like Jersey, Swagger.
- Learning and application of programming languages such as Java, React.
- Working with tools like Git, Jenkins etc.
- Testing and Implementation of the application.
- Iterative and incremental approaches of software development using AGILE methodology. .

We wish her success for all her future endeavors.

Yours Sincerely, For Cisco Systems (India) Private Ltd.

myanhe

÷.

........

CISCO

Privanka Bhagat Manager Recruiting. Talent Acquisition Cisco Systems Inc.



21/12/2018

#### TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. Chaitanya Aniruddh Ogirala student of Mechanical Engineering from S.R.K.R Engineering College, has successfully completed Internship training starting from 12th December 2018 to 21st December 2018 in Royal Enfield - Production Department, Thiruvottiyur.

Regards,

Human Resources



A Buit of Eacher Motors Ltd. Derveriger High Road. Dautzestown, Chemnar - 197519 T +41 8044 42230400 F +41 8044 42011719 water construction to the

Regd. Office: 3" Fast, Select City T +84 [11] 28053723 Page 32 A. Dearres Centre, Saket, New Date: 110 017 E info@relies in Cite 1.5410276.19429.02120877 E info@relies in Www.resale.ndefil.com

	60 CERTAIN NOR
A Sall	STEEL Pride of Steel
राष्ट्रीय इस्पात	निगम लिमिटेड Rashtriya Ispat Nigam Limited
विशाखपट्टण	म इस्पात संयंत्र Visakhapatnam Steel Plant
तकनीर्क	ो प्रशिक्षण केन्द्र Technical Training Institute
	विशाखपद्रणम् Visakhapatnam-530031
lo. 0004730	प्रमाण पत्र CERTIFICATE
0004730	W18041N02535-0125
प्रामाणित	किया जाता है कि श्री Mhis is to cartify the
14- 101-	
MIT./M.S	GULIPILLI VINAY KUMANE a student o
वर्ष/पाठचक्रम/शाखा Year/Con	rse/Branch/ were barren barren barren
in the second second course of the second seco	TAN TANK TECHAMECHAMICAT
वेध्यार्थी ने from <u>अ                                   </u>	CENGINEERING COLLEGE, BHIMAVARAM
· · ·	
has undergoneINTER	प्रशिक्षण training विशाखपट्टणम इस्पात सर्वत
5 at Visabhanaturan Charl	Plant in
🕈 at Visakhapatnam Steel	Plant in TECHNICAL SERVICES
क at Visakhapatnam Steel विभागों में depts. from दि	Plant in TECHNICAL SERVICES
क at Visakhapatnam Steel वेभागों में depts. from दि _	Plant in TECHNICAL SERVICES तक प्राप्त किन्दा
क at Visakhapatnam Steel विभागों में depts. from दि _ परियोजना शीर्षक The projec	Plant in IECHNICAL SERVICES तक प्राप्त वित्य तक प्राप्त वित्य
क at Visakhapatnam Steel विभागों में depts. from दि _ गरियोजना शीर्षक The projec	Plant in राष्ट्रास्त्र राष्ट्र तक प्राप्त वित्य राष्ट्र वित्य तक प्राप्त वित्य रा title is
क at Visakhapatnam Steel विभागों में depts. from दि _ गरियोजना शीर्षक The projec	Plant in रि to तक प्राप्त वित्ता रे to तक प्राप्त वित्ता t title is
क at Visakhapatnam Steel विभागों में depts. from दि _ परियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव	Plant in IECHNICAL SERVICES तक प्राप्त वित्ता तक त्राप्त वित्ता तक त्राप्त वित्ता तक त्र प्राप्त वित्ता तक प्राप्त वित्ता तक त्राप्त वित्ता तक त्राप्त वित्ता तक त्राप्त वित्ता तक त्राप्त वित्ता तक त्र प्राप्त वित्ता तक त्र त्र क त्राप्त वित्ता तक त्र प्राप्त तक त्र तक त्र प्राप्त वित्ता तक त्र प्राप्ता तक त्र प्राप्त तक त्र त्र तक त्र तक त्र प्राप्ता तक त्र प्राप्ता तक त्र तक त्र तक त्र त्र तक त्र तक त्र तक त्र त्र तक त्र त्र तक त्र तक त्र तक त्र तक त्र तक त्र त्र तक त्र त्र तक त्र तक त्र तक त्र तक त्र तक त्र तक त्र तक त्र त्र तक त्र त्र त्र
क at Visakhapatnam Steel विभागों में depts. from दि _ परियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव	Plant in <u>TECHNICAL SERVICES</u> <u>17/12/2018</u> से to <u>29/12/2018</u> तक प्राप्त किन्दा et title is <u>********************************</u> न आचरण His/Her conduct during the period of training
क at Visakhapatnam Steel विभागों में depts. from दि _ परियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव	Plant in TECHNICAL SERVICES तक प्राप्त कित्ता to तक प्राप्त कित्ता to title is त आचरण His/Her conduct during the period of a similar
क at Visakhapatnam Steel वेभागों में depts. from दि _ गरियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव है।	Plant in ICCHNICAL SERVICES तक प्राप्त कित्य to तक प्राप्त कित्य at title is त आचरण His/Her conduct during the period of seaming
b at Visakhapatnam Steel वेभागों में depts. from दि _ ारियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव है। रथल/Place : Visakhapatn	Plant in TECHNICAL SERVICES 11/12/2018 से to तक प्राप्त कित्ता से 1029/12/2018 तक प्राप्त कित्ता t title is स्वत्र स्वयं स त्वयं त्वयं त्वयं त्वयं त्वयं त्वयं त्वयं स्वयं स्वयं स्वयं स्वयं स्वयं स्वयं स्वयं स्वयं त्वयं स्वयं त्ययं त्ययं त्ययं त्ययं
b at Visakhapatnam Steel वेभागों में depts. from दि ारियोजना शीर्षक The projec प्रिक्षिण अवधि में उनव है। रथल/Place : Visakhapatn दि/Date	Plant in IECHNICAL SERVICES तक प्राप्त कि से to तक प्राप्त कि t title is त आचरण His/Her conduct during the period of a damage am प्रसिण समन्वयक के हस्ताक्षर मोहर :
क at Visakhapatnam Steel विभागों में depts. from दि _ परियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव  प्रथल/Place : Visakhapatn दि/Date	Plant in <u>IECHNICAL SERVICES</u> <u>17/12/2018</u> से to <u>29/12/2018</u> तक प्राप्त किन्दा et title is <u>жилини и на </u>
क at Visakhapatnam Steel विभागों में depts. from दि _ परियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव 	Plant in
क at Visakhapatnam Steel विभागों में depts. from दि _ परियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव है। रथल/Place : Visakhapatn दि/Date29/12/2018	Plant in
क at Visakhapatnam Steel विभागों में depts. from दि _ परियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव है। रथल/Place : Visakhapatn दि/Date29/12/2018	Plant in
क at Visakhapatnam Steel विभागों में depts. from दि _ परियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव 	Plant in
क at Visakhapatnam Steel विभागों में depts. from दि _ परियोजना शीर्षक The projec प्रशिक्षण अवधि में उनव है। रथल/Place : Visakhapatn दि/Date 29/12/2018	Plant in



#### भारतीय रेल INDIAN RAILWAYS खीजल लोको शेड, मौलाली, हैदराबाद DIESEL LOCO SHED, MOULA-ALI, HYDERABAD

## प्रमाणपत्र CERTIFICATE

This is to certify that Mr.S.ABHISHEK (17B91A03P6) studying B-Tech 2<sup>nd</sup> year 2<sup>nd</sup> semester in Mechanical Engineering in SRKR Engineering College, Bhimavaram has done "Internship" on "DIESEL LOCOMOTIVE PERFORMANCE USING TURBO CHARGER, COOLING SYSTEMS AND LUBRICATION" at Diesel Loco Shed, Moula-Ali, Secunderabad, South Central Railway from 10-05-2019 to 25-05-2019 under the guidance of Sri.G.Vijayaram, SSE/CRS/DLS/MLY for partial fulfillment of Bachelor Degree award.

Dt.25-05-2019

(ए.सुरेंदर)

(A.SURENDER) समयाइ/डो /मोलाला सह**ADME/DSR/ME**/मेयर Assistant Clotherel Hechanical Engineer टीजन लोगो शोड DIESEL LOCO SHED द. म. ऐत्ये, मोला अली, S.C. Railway, Moula-Ah.

Scanned with CamScanner





Scanned with CamScanner






00

Date: 06-06-2018 TO WHOM SO EVER IT MAY CONCERN

15.5

A set of and a

This is to certify that Mr. BALLA BABU RAO s/o BALLA BABJI bearing ID: 315175720020 of 8.Tech (Mechanical Department) graduating in S.R.K.R.Engineering college(Bhimavaram) has successfully completed his industrial training apprenticeship program of 10 Days (from 28-05-2018 to 06-06-2018) at our company.

During this training program with us he was found punctual with good learning skills, hardworking and inquisitive.

We wish him/every success in life,

Ŀ,

AUTOMOBILES PVT.LTD. SAI SWA

ized signatu

Author

Sai Swarna HYUNDAI (A unit of Sai Swarna Automobiles Pvt. Ltd.) Beside HP CNG Petrol Bunk Ramavarappadu Ring. VLJAYAWADA - 521 108.TEL . 0865-2844123 FAX 0866-2844777. E-mail . saiswamahyundai@gmail.com

Scanned with CamScanner



faite 06.06-2018

# TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr. CHINTHA RAJAVARDHAN s/o CH.KUMAR RAIU bearing 10: 315175720056 of B.Tech (Mechanical Department) graduating in S.R.K.R.Engineering college (Bhimavaram) has successfully completed his industrial training apprenticeship program of 10 Days (from 28-05-2018 to 06-06-2018) at our company.

During this training program with us he was found punctual with good learning skills, hardworking and inquisitive.

We wish him every success in life,



Sai Swarna HYUNDRI

(A unit of Sal Swarna Automobiles Pvt. Ltd.) Beside HP CNG Petrol Bunk Ramavarappadu Ring. VIJAYAWADA - 521 108 TEL . 0866-2844123,FAX . 0866-2844777, E-mail : saiswarnahyundai@gmail.com

Scanned with CamScanner



Date: 06-06-2018

# TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr. CHIGURUPATI REVANTH SATYADEV s/o CH.PETER bearing ID: 315175720048 of B.Tech (Mechanical Department) graduating in S.R.K.R.Engineering college (Bhimavaram) has successfully completed his industrial training apprenticeship program of 10 Days (from 28-05-2018 to 06-06-2018) at our company.

During this training program with us he was found punctual with good learning skills, hardworking and inquisitive.

We wish him gvery success in life,

LITOMOBILES PVT.LTD.



J I N THINKING NEW POSSIBILITIES

Sai Swarna HYUNDAI

(A unit of Sal Swarna Automobiles Pvt. Ltd.) Beside HP CNG Petrol Bunk, Ramavarappadu Ring. VIJAYAWADA - 521 108.TEL : 0866-2844123,FAX : 0866-2844777. E-mail : saiswarnahyundai@gmail.com

Scanned with CamScanner

MECH 315175 720186 राष्ट्रीय इस्पाल निगम लिमिटेड Rashtriya Ispat Nigam Limited विशाखपरणम इस्पात संयंत्र Visakhapatnam Steel Plant तकनीकी प्रशिक्षण केन्द्र Technical Training Institute विशाखपट्टणम् Visakhapatnam-530031 प्रमाण पत्र CERTIFICATE STAUTTNOTUST-040H No. 0000640 0000640 प्रामाणित किया जाता है कि शी/This is to certify that e NAKKELLA UJWALA a student of Mr./Ms. III/B E/MECHANICAL (वर्ष/पाठयक्रम/शाखा Year/Course/Branch/ 6. SRKR ENGINEERING COLLEGE, BHIMAVARAM रो विध्यार्थी ने from INTERNSHIP प्रशिक्षण tranna विशाखपदणम इस्पात संयत्र has undergone 0 ENGINEERING SHOPS & FOUNDRY (and) क at Visakhapatnam Steel Plant in\_ 19/05/2018 07/05/2018 d'to. तक प्राप्त किया। विभागों में depts. from दि परियोजना सीपेक The project title प्रशिक्षण अवधि में उनका आचरण His/Her conduct during the period of training is \_G000 - है|-रशल/Place : Visakhapatnam प्रक्षिण समन्वयक के हस्ताक्षर मोहर के साथा R/Date 19/05/2018 Signature of Training Co-Ordinator with Seal KHIDER RIA - J. PRABHAKARA PATH MANY PLAN Teconical Training Institut שמותונו היו דיו אנו WAR Visathanah Maine Maine - Hartister Scanned with CamScanner



June-07,2018

Mr. Gadigatla Harish

S.R.K.R Engineering College

Chinna Amiram, Bhimavaram

Andhra Pradesh

Dear Mr. Harish,

In response to the request of your Institute viz. S.R.K.R Engineering College, Bhimavaram. We are please to offer you the facility for Project Training at our factory at Liugong India Pvt. Ltd. Plot-163, Sector-3 Pithampur, Dist. DHAR (MP).

Your Project work shall be in the area of Mechanical Engineering for Period of 30 days i.e. from May-10, 2018 to June-10, 2018. On Completion of your project training, you shall be required to submit a report on your assigned project.

It is clearly understood and agreed between us that this letter shall not in any way be treated and/or construed as a letter of appointment or offer of employment with this Company, and the company will not be under any obligation whatsoever to offer you employment on completion of the period of Summer Project Training.

You shall be required to make your own arrangements for boarding and lodging. You will be required to follow Safety and other administrative rules during your training with us, and in no case company will be responsible for any mishap during your stay with us.

Thanking You,

Yours Faithfully,

Liugong Indiante td.

Liugong India Pvt. Ltd.

Factory : Plot No. 163, Sector - III Pithampur-454 775 Dist. Dhar Regd. Off.: 82, Okhla Industrial Estate Phase - III, New Delhi - 110 020 CIN : U31908D 2009 Pr C167005 T +91 7292 416702

T+91 11 47272200 www.liugong.com



# SOUTH CENTRAL RAILWAY WOMEN'S WELFARE ORGANISATION [REGD] VIJAYAWADA



REGD No: 183/1992

DATE: 05-07-2018

# TO WHOM SOEVER IT MAY CONCERN

This is to certify that Mr. SIRIGINEEDI DURGA SATISH KUMAR S/o Sri. S. VEERA VENKATESWARA RAO Enrollment No: 160103206 course BACHELOR OF TECHNOLOGY – ECE – semester II-2, student of SAGI RAMAKRISHNAM RAJU ENGINEERING COLLEGE, Bhimavaram, has successfully completed the INTERNSHIP in SIGNAL AND TELECOMMUNICATION DEPARTMENT, SOUTH CENTRAL RAILWAY, VIJAYAWADA from 04<sup>TH</sup> Jun '2018 to 04<sup>TH</sup> Jul '2018.

During the tenure of his internship, his conduct and contribution have been GOOD.

We wish him all the best and success.

SECRETARY SOUTH CENTRAL RAILWAY WOMEN'S WELFARE ORGANISATION (Regd.) VIJAYAWADA.



178914120

1

2.0

----



MCR Web Solutions and Floor, 1-Hub, Incubation Centre, SRKR Engineering College, Bhimavaram,

Andhra Pradesh, India - 534204 PH (+91) 92 93 94 0004 Email: info@mcr.org.in

Date.31/03/2019

# CERTIFICATE OF INTERNSHIP

This is to certify that Ms. Atluri Sreeja, Regd. No. 17B91A1209, a student of B.Tech - Information Technology, SRKR Engineering College, Bhimavaram, has successfully completed 1 year long internship (from 1<sup>st</sup> April 2018 to 31<sup>st</sup> March 2019) in our company. She has been trained and has expertise in the following skillset:

Technologies: HTML5, CSS, JavaScript, PHP5, MySQL Tools: Opencart, WAMP

During this period, she was found to be hardworking and inquisitive. We wish her every success in life.

Dr. Suresh Mudunuri Director & Co-Founder MCR Web Solutions



# MCR Web Solutions

This is to certify that the second building Kanth, and, and the traditional a Statent of Barch -Information Technology, SNRS, Engineering College, Building and, he successfully completed it year long internship (from 12 Apol 2018 to 314 March 2019) in our company He has been trained and has expertise in the following stillset;

Technologies: HTMLS, CSS, JavaScript, PHPS, MySQL, Kluery Tools: Opencart, WaMP, Cordoxa, Jocemia

During this period, he was found to be intelligent, passionate and inquisitive. We with how every success in life

Page 46



# GERTIE CATE OF INTERNSEIP

MCR Web Solutions

Calle Carlin State Conter College Shalls PH 141710233 Build A Email

This is to certify that Ms. Bolla Deepika, Regd. No. 17891A1220, a student of B.Tech - Information Technology, SRKR Engineering College, Bhimavaram, has successfully completed 1 year long internship (from 1" April 2018 to 31" March 2019) in our company. She has been trained and has expertise in the following skillset:

Technologies: HTML5, CSS, JavaScript, PHP5, MySQL Tools: WAMP

During this period, she was found to be hardworking and inquisitive. We wish her every success in life.

Dr. Suresh Mudunuri **Director & Co-Founder** MCR Web Solutions



# MCR Web Solutions

Product Provide State of the State of the State of State

Data 31/03/2019

# CERTIFICATE OF INTERNSHIP

This is to certify that Mr. Burugupalli Jaswanth Chowdary, Regd. No. 17891A1223, a student of B.Tech - Information Technology, SRKR Engineering College, Bhimavaram, has successfully completed 1 year long internship (from 1" April 2018 to 31" March 2019) in our company. He has been trained and has expertise in the following skillset:

Technologies: HTML5, CSS, JavaScript, PHP5, MySQL Tools: Opencart, WAMP

During this period, he was found to be sincere, hard working and inquisitive. We wish him every success in life.



Dr. Suresh Mudunuri Director & Co-Founder MCR Web Solutions





# **CR Web Solutions** 2nd Floor, I-Hub, Incubation Centre, SRKR Engineering College, Bhimavaram,

Andhra Pradesh, India - 534204. PH : (+91) 92 93 94 0004 Email : info@mcr.org.in

Date.31/03/2019

\*

-----

Jelmin

# CERTIFICATE OF INTERNSHIP

This is to certify that Ms. Dronavajjhala Yamini, Regd. No. 17B91A1234, a student of B.Tech -Information Technology, SRKR Engineering College, Bhimavaram, has successfully completed 1 year long internship (from 1<sup>st</sup> April 2018 to 31<sup>st</sup> March 2019) in our company. She has been trained and has expertise in the following skillset:

Technologies: HTML5, CSS, JavaScript, PHP5, MySQL Tools: Opencart, WAMP

During this period, she was found to be hardworking and inquisitive. We wish her every success in life.

Dr. Suresh Mudunuri Director & Co-Founder MCR Web Solutions





ICR Web Solution 2nd Floor, I-Hob, incubation Centre, SPRR Engineering College, Bitamazar and Andhra Pradesh, India - 534204, PH, (+93192/93/94 (KC4 Email, 1979), pmc ang in

Date.31/03/2019

# **CERTIFICATE OF INTERNSHIP**

This is to certify that Mr. Kaki Anil Kumar, Regd. No. 17B91A1262, a student of B.Tech -Information Technology, SRKR Engineering College, Bhimavaram, has successfully completed 1 year long internship (from 1" April 2018 to 31" March 2019) in our company. He has been trained and has expertise in the following skillset:

Technologies: HTML5, CSS, JavaScript, PHP5, MySQL Tools: Joomla, Wordpress, WAMP

During this period, he was found to be energetic and inquisitive. We wish him every success in life.

Dr. Suresh Mudunuri **Director & Co-Founder** MCR Web Solutions





Data AL 413/9019

#### CERTIFICATE OF INTERNSHIP

This is to certify that Mr. Khajjapan Trja Sal Srinkan, Repil Ani. 17891A1220, a student of 8 Tech-Information Technology, SRXR Engineering College. Bhinavaram, has successfully completed 1 mar long Internalise Trom 1" April 2018 to 11" March 2019) in our company. He has been trained and has experiments in the following shifter:

Technologies: HTMLS, CS5, LavaScript, PTPS, MySQL Tools: Monatle, WAMD

During this period, he was found to be energetic and inquisitive. We wish him every success in life

I'm Sauenen's

Director & Co-Founder MCR Web selectors



# GERTIFICATE OF INTERNSHIP

ICR Web Solutio

the analysis without a bary that the constraint of the second second second second second second second second

This is to centify that Mr. Killana Rajesh, Rept. No. 17891A1272, a student of 8 Jech - Information Technology, SRKR Engineering College, Bhimavaram, has successfully completed 1 year long internship (from 1" April 2018 to 31" March 2019) in our company. He has been trained and has expertise in the following skillset:

Technologies: HTML5, CSS, JavaScript, PHP5, MySQL Tools Moodle, WAMP

During this period, he was found to be intelligent, hardworking and inquisitive. We wan have every weenss in He

Date 31/13/2014

Dr. Suresh Mudunuri Director & Co-Founder MCR Web Solution



17391412



MCR Web Solutions 2nd Floor, I-Hub, incubation Centre, SRKR Engineering College, Bhimawaram, Andhra Pradesh, India - 534204, PH (491) 92 93 94 0004 Email . info@mcr.org in

Date.31/03/2019

# CERTIFICATE OF INTERNSHIP

This is to certify that Ms. Kommisetti Naga Venkata Sri Madhuri, Regd. No. 17B91A1275, a student of B.Tech - Information Technology, SRKR Engineering College, Bhimavaram, has successfully completed 1 year long internship (from 1<sup>st</sup> April 2018 to 31<sup>st</sup> March 2019) in our company. She has been trained and has expertise in the following skillset:

Technologies: HTML5, CSS, JavaScript, PHP5, MySQL Tools: WAMP

During this period, she was found to be hardworking and inquisitive. We wish her every success in life.

Dr. Suresh Mudunuri Director & Co-Founder MCR Web Solutions



Scanned with CarnScanner

171391A12 AC



and the co

MCR Web Solutions

2nd Floor, I-Hub. Incubation Centre, SRKR Engineering College, Bhimavaram, Andhra Pradesh, India - 534204, PH. (+91) 92 93 94 0004 Email ...info@mcr.org.in

Date.31/03/2019

### **CERTIFICATE OF INTERNSHIP**

This is to certify that Ms. Meegada Vandhitha Charanya, Regd. No. 17B91A12A0, a student of **B.Tech - Information Technology**, SRKR Engineering College, Bhimavaram, has successfully completed **1 year long internship** (from 1<sup>st</sup> April 2018 to 31<sup>st</sup> March 2019) in our company. She has been trained and has expertise in the following skillset:

Technologies: HTML5, CSS, JavaScript, PHP5, MySQL Tools: WAMP

During this period, she was found to be hardworking and inquisitive. We wish her every success in life.

Dr. Suresh Mudunuri Director & Co-Founder MCR Web Solutions



171391AIZCH



MCR Web Solutions

2nd Floor, I-Hub, Incubation Centre, SRKR Engineering College, Bhimavatam, Andhra Pradesh, India - 534204, PH : (+91) 92 93 94 0004 Email : info@mcr.org.in

Date.31/03/2019

# **CERTIFICATE OF INTERNSHIP**

This is to certify that Mr. Pamulapati Tarun Sai, Regd. No. 17B91A12C4, a student of B.Tech – Information Technology, SRKR Engineering College, Bhimavaram, has successfully completed **1** year long internship (from 1<sup>st</sup> April 2018 to 31<sup>st</sup> March 2019) in our company. He has been trained and has expertise in the following skillset:

Technologies: HTML5, CSS, JavaScript, PHP5, MySQL Tools: Opencart, Moodle, WAMP

During this period, he was found to be hard working, passionate and inquisitive. We wish him every success in life.

1

Dr. Suresh Mudunuri Director & Co-Founder MCR Web Solutions





TANCY

27-17-55/5, II Flr, ASR Nagar, TV Tower Road, Near GSR Royal, Bhimavaram 534202 India +91-96661-33190 info@srimaharshiconsultancy.com www.srimaharshiconsultancy.com

> Bhimavaram 25 July 2018

# TO WHOMSOEVER IT MAY CONCERN

This is to certify GADA SARANYA (REGD NO: 315175711032) of S.R.K.R. Engineering college, Department of Information Technology has completed her Internship project at Sri Maharshi Consultancy Pvt Ltd during the period of June 2017 and Apr 2018

Sri Manarshi Consultancy Pvt Ltd is Product organization offering products and services to many National and International customers with primary focus in Banking Domain (Mobile Banking, Online Banking, USSD Banking, Biometric Banking, Treasury)

Saranya joined us as Internship student and she has proactively learned Jasper Reports, Java Mail API, Visa Integration procedures and instrumental in the development Mobile Banking App for one of our International Banking Customer.

Saranya's contribution in the areas of Mail Server Integration with attachments (For a Leading Dental Institution in Health Care Domain), Customer Bank Statement generation module using Jasper Reports(For an International Bank), Server side Integration to enable Visa Services(For an International Bank) is commendable.

Page 56

Saranya will be an asset and she is one of the best candidates.

All the best Saranya

SRINIVASA VARMA

27-17-55/5, II Fir, ASR Nagar, TV Tower Road, Near GSR Royal, Bhimavaram 534202 India +91-96661-33190 info@srimaharshiconsultancy.com www.srimaharshiconsultancy.com

Bhimavaram

25 July 2018

#### TO WHOMSOEVER IT MAY CONCERN

This is to certify KABOTHULA RAHUL(REGD NO: 315175711050) of S.R.K.R. Engineering college, Department of information Technology has completed his internship project at Sri Maharshi Consultancy Pvt Ltd during the period of June 2017 and Apr 2018

 Wenershi Consultancy Pvt Ltd is Product organization offering products and services to many National memoriane customers with primary focus in Banking Domain(Mobile Banking, Online Banking, USSD Diametric Banking, Treasury)

Rabul joined us as Internship student and he has proactively learned IOS and instrumental in the development IOS Mobile Banking App for one of our International Banking Customer. Rabul's contribution in the areas of Maps integration, Server integration using JSON, App screen navigation is commendable.

Rahul will be an asset and he is one of the best candidates.

SPRINTWASH VARAA 25/7/2018

inter the second second

CULTANCY

All the best



27-17-55/5, II FIr, ASR Nagar, TV Tower Road, Near GSR Royal, Bhimavaram 534202 India +91-96661-33190 info@srimaharshiconsultancy.com www.srimaharshiconsultancy.com

> Bhimavaram 25 July 2018

# TO WHOMSOEVER IT MAY CONCERN

This is to certify KANDIBOINA RAHUL (REGD NO: 315175711057) of S.R.K.R. Engineering college, Department of Information Technology has completed his Internship project at Sri Maharshi Consultancy Pvt Ltd during the period of June 2017 and Apr 2018

Sci Manarshi Consultancy Pvt Ltd is Product organization offering products and services to many National and International customers with primary focus in Banking Domain (Mobile Banking, Online Banking, USSD Banking, Biometric Banking, Treasury)

Rahul joined us as Internship student and he has proactively learned Android and instrumental in the development Android Mobile Banking App for one of our International Banking Customer. Rahul's contribution in the areas of Server integration using JSON, App screen navigation is commendable.

All the best Rahul



SRINIVASA VARMA



Page 58



SULTANC:

27-17-55/5, II Fir, ASR Nagar, TV Tower Road, Near GSR Royal, Bhimavaram 534202 India +91-96661-33190 info@srimaharshiconsultancy.com www.srimaharshiconsultancy.com

Bhimavaram

25 July 2018

#### TO WHOMSOEVER IT MAY CONCERN

This is to certify MANEM PAVITRA (REGD NO: 315175711092) of S.R.K.R. Engineering college, Department of information Technology has completed her internship project at Sri Maharshi Consultancy Pvt Ltd during the period of June 2017 and Nov 2017

Schlahar Ind Consultancy Pvt Ltd is Product organization offering products and services to many National End International customers with primary focus in Banking Domain (Mobile Banking, Online Banking, 500 Sanking, Biometric Banking, Treasury)

Pavitre joined us as Internship student and she has proactively learned Android Material Design

All the best Pavitra



SRÍNIVASA VARMA

27-17-55/5, II Fir, ASR Nagar, TV Tower Road, Near GSR Royal, Bhimavaram 534202 India +91-96661-33190 infc@srimaharshiconsultancy.com www.srimaharshiconsultancy.com

> Bhimavaram 25 July 2018

#### TO WHOMSOEVER IT MAY CONCERN

This is to certify **PINNAMANENI SRAVYA (REGD NO: 315175711124)** of S.R.K.R. Engineering college, Department of Information Technology has completed her Internship project at Sri Maharshi Consultancy Pyt Ltd during the period of June 2017 and Apr 2018

Usenershi Consultancy Pvt Ltd is Product organization offering products and services to many National and International customers with primary focus in Banking Domain (Mobile Banking, Online Banking, USSD Banking, Biometric Banking, Treasury)

Sravya joined us as internship student and she has proactively learned Bootstrap, jQuery, CSS & Metronics template. Sravya is instrumental in developing Page designs and her contribution to Registration module for an online SMS Gateway and Registration modules for Merchant and Agent for an International Bank is commendable.

All the best Sravya

SRINIVASA VARMA



27-17-55/5, II Fir, ASR Nagar, TV Tower Road, Near GSR Royal, Bhimavaram 534202 India +91-96661-33190 info@srimaharshiconsultancy.com www.srimaharshiconsultancy.com

Bhimavaram

25 July 2018

### TO WHOMSOEVER IT MAY CONCERN

This is to certify RAYALA HEMA (REGD NO: 315175711130) of S.R.K.R. Engineering college, Department of Information Technology has completed her Internship project at Sri Maharshi Consultancy Pvt Ltd during the period of June 2017 and Apr 2018

Canarshi Consultancy Pvt Ltd is Product organization offering products and services to many National end international customers with primary focus in Banking Domain (Mobile Banking, Online Banking, USSD Banking, Biometric Banking, Treasury)

Hema joined us as Internship student and she has proactively learned Jasper Reports, Visa Integration procedures and instrumental in the development Mobile Banking App for one of our International Banking Customer.

Hema's contribution in the areas of Report generation for Enterprise HR System (Payslips), Invoice Generation for an Online SMS Gateway, Server side Integration to enable Visa Services (For an International Bank) is commendable.

Page 61

Hema will be an asset and she is one of the best candidate.

lit a best Hema

SRINIVASA VARMA



27-17-55/5, II Flr, ASR Nagar, TV Tower Road, Near GSR Royal, Bhimavaram 534202 India +91-96661-33190 info@srimaharshiconsultancy.com www.srimaharshiconsultancy.com

Bhimavaram

25 July 2018

### TO WHOMSOEVER IT MAY CONCERN

This is to certify VISSAPRAGADA SUNDARA SREE HARITHA (REGD NO: 315175711172) of S.R.K.R. Engineering college, Department of Information Technology has completed her Internship project at Sri Maharshi Consultancy Pvt Ltd during the period of June 2017 and Apr 2018

ahershi Consultancy Pvt Ltd is Product organization offering products and services to many National international customers with primary focus in Banking Domain (Mobile Banking, Online Banking, SSD Banking, Biometric Banking, Treasury)

Haritha joined us as Internship student and she has proactively learned Android Material Design, Eclipse for J2EE and Tomcat application deployment. Haritha is committed and instrumental in completing assigned tasks in the areas of Screen Design and Application Deployments.

All the best Haritha

SRINIVASA VARMA



Date: 07th June 2019

### TO WHOMSOEVER CONCERNED

This is to certify that Mr. Uday Sai Tyada(19-114-2080) was working with us as "Intern(Development)" from 21<sup>st</sup> January 2019 to 07<sup>th</sup> June 2019.

During his tenure, his performance and conduct were good and appreciated.

We wish him good luck in the future !!!

Thanking You,

For KR mRoads India Pvt Ltd

Vinay Kumar Human Resources



# PROJECT INTERNSHIP CERTIFICATE

This is to certify that

Mr. Malireddi Kishore

student of SRKR Engineering College, Bhimavaram

undergoing B.Tech in Computer Science and Engineering did internship under the Accelerator brand in Phygital mode on the project ExOP 0451: Automation Tool for Migration Spark at Tata Consultancy Services Limited, Mumbai from 31-Jan-19 to 12-Apr-19 and completed the project work satisfactorily under the guidance of Mr. Naveen Chitrapu



Chandra Koduru Head – Academic Interface Programme

	SUMMER IN OI	ITERNSHIP N	LEADINGINDIA AI
	CERTIFICATE OF	COMPLETION	PLEARNING
-	AND AND ADDRESS OF AN ADDRESS OF ADDRES ADDRESS OF ADDRESS OF ADDR		A STATE OF
This is to certify t	hat Saladi.Lakshmi	narayana	All off the second seco
from S.R.K.R. Engi	neering College, Bhim	avaram	ADDER TO LEARNING AND MELLE MADE, CAMPADE AN INFO DE LEARNING AND DE LEARNING AND MELLE METHOD MADE AND AND AND AND AND AND AND AND AND AND AND AND AND AND AND AND AND AND AND
has successfully	completed <u>fo</u>	te i stata se hitu hit. Ng ani dhi shedal u Watari i sa ani sa	weeks internship
Duration 27th M	fay to 21" June	2019	
Venue : Bennet	University, Grec	iter Noida (l	J.P.) India
have	wy	(a) and all approximate ranks (b) b and all a second and the performance and all a with a life (b) by the balance of the second by the balance of the second by the balance of the second by the balance of the second second second second s	Unushi Verme
Duck	A PARTIN AND MADE AND AND AND AND AND	CTU DE MANDELINA ANTANCE LA SERVICE	horizon

ARTIFICIA	SUMMER INT ON AL INTELLIGENCE	ERNSHIP	LEARNING	SM-12-1
	CERTIFICATE OF C	OMPLETION	K	
This is to certify	that Satuluri Abhiram			CHARLES STREET
from S.R.K.R. En	gineering College, Bhimay	aram		
has successfully Duration 27 <sup>th</sup>	y completed <u>four</u> May to 21" June		weeks interns	ship
Venue : Benne	tt University, Greate いり	er Noida (U. <u>P</u> ur	P.) India Unustri Vierm	2





BENNETI	SUMM	ER INTERN ON	SHIP
ARII	ICIAL INTELLIG	ENCE AND	D DEEP LEARNING
	CERTIFIC	ATE OF COMPLI	ETION
	No. of Concession, State of Co		at a track
This is to ce	ertify that Sasuman	a Vinay Kumar	Cardina - Francisco - Francisc
rom S.R.K.	R. Engineering College	e, Bhimavaram	2005 (2005) 2002 (2005) 2003 (2005) 2005 (2005)
nas succes	ssfully completed	four four	weeks internship
Duration	27 <sup>th</sup> May to 21" June	201	19
Venue : Be	ennett University,	Greater No	ida (ILP) India
	wey		
-Dec	par v		Hudhushi Verne
Head Comp	r. Deepak Garg uter Science Engineering		Dr. Madhushi Verma

BENNETT UNIVERSITY ATORE-SERIE DITILUTY	SUMME	R INTERNSI ON	HIP Sr.No.SM-19-125
ARTI	FICIAL INTELLIGE	NCE AND	DEEP LEARNING
	CERTIFICAT	TE OF COMPLET	ION
This is to ce	ertify that <u>Bojjagani</u> I	Naga Lakshmi	
from S.R.K.	R. Engineering College,	Bhimavaram	
has succe	ssfully completed	four	weeks internship.
Duration_	27 <sup>th</sup> May to 21 <sup>st</sup> June	2019	
Venue : Be	ennett University, G	Freater Noid	Dr. Madhushi Verma Internship Coordinator



#### No. DST/INT/ISR/P-22/2017

Government of India Ministry of Science and Technology Department of Science & Technology (International Bilateral Cooperation Division)

> Technology Bhavan, New Mehraulli Road New Delhi-110016 Date: 21.08.2018

#### ORDER

Subject: Implementation of Indo-Israeli Joint project entitled: "Dissecting Autism Trajectories in Longitudinal Electronic Health Records" coordinated by Dr. R.N.V. Jagan Mohan, Professor, Department of Information Technology, SRKR Engineering College, Bhimavaram-534204, Andhra Pradesh.

Sanction of the President is hereby accorded for incurring an expenditure not exceeding Rs. 29,32,400/- (Rupees Twenty Nine Lakhs Thirty Two Thousand and Four Hundred only) for implementation of the Indo-Israeli joint project entitled "Dissecting Autism Trajectories in Longitudinal Electronic Health Records" coordinated by Dr. R.N.V. Jagan Mohan, Professor, Department of Information Technology, SRKR Engineering College, Bhimavaram-534204, Andhra Pradesh in collaboration with Alal Eran, Senior Lecturer, Department of Life Sciences, Ben-Gurion University of the Negev, Israel for a total duration of 2 years from the date of issue of the sanction order.

2. As per the terms and conditions, agreed by both side, under the project the sending side will bear the cost related to the International air travel, medical insurance, visa charges and other expenses whereas the receiving side shall bear the cost of accommodation only of the visiting scientist. The break-up of approved expenditure is as indicated below:

Items of Expenditure	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	Total
-		<b></b>	
Manpower			
1 RA@ Rs. 36,000/- + 10%HR=39,600/-	4,75,200/-	4,75,200/-	9,50,400/-
1 JRF@ Rs. 25,000/- +10%HRA=27,500/-	3,30,000/-	3,30,000/-	6,60,000/-
Visits from India to Israel :		i	
Number of visits and duration for each visit-	2 visits, 10 days and 30 days	2 visits, 10 days and 30 days	-
International airfare @Rs. 1,60,000/-	3,20,000/-	3,20,000/-	· 6,40,000/-
Local travel in India & Israel from city parent Nearest International Air Port from the Institute	24,000/-	24,000/-	48,000/-
Per Diem @ \$50 per day x 40 days x Rs.68	1,36,000/-	1,36,000/-	2,72,000/-
Visa fee	4,000/-	4,000/-	8,000/-

Overseas medical insurance	4,000/-	4,000/-	8,000/-
Visits from Israel to India :			
Number of visits and duration for each visit	2 visits, 10 days and 30 days	2 visits, 10 days and 30 days	
Accommodation in Guest House@ Rs. 2,500 per day	1,00,000/-	1,00,000/-	2,00,000/-
Contingency	30,000/-	50,000/-	80,000/-
Overhead Charges	33,000/-	33,000/-	66,000/-
Total	14,56,200/-	14,76,200/-	29,32,400/-

3. Sanction of the President is hereby accorded for release of 1<sup>st</sup> instalment amounting to Rs. 11,64,960/- (Rupees Eleven Lakhs Sixty Four Thousand Nine Hundred and Sixty only) to the grantee Institute. The amount of grant will be drawn by the Drawing and Disbursing Officer, DST and will be disbursed to SRKR Engineering College, Andhra Pradesh. The bank details for electronic transfer of funds through RTGS are given below: -

Account Holders Name/ Designation	Principal SRKR Engineering College
Name of Bank	State Bank of India, JP Road Branch, Bhimavaram, West Godavari District, Andhra Pradesh, Pin 534204
Bank Account Number	62460008072
IFSC Code	SBIN0020530

#### Condition for placing of grant amount:

11

4. The institute will maintain separate audited account for the project and the amount of grant will be kept in a bank account earning interest. All interests or other earnings against Grants-in aid or advances (other than reimbursement) released to any grantee institution should be mandatorily remitted to the Consolidated Fund of India immediately after finalization of the accounts. Such advances should not be allowed to be adjusted against future releases.

#### Conditions for submission of SE/UC and Progress report:

- 5. (a) the grantee organisation will furnish to the Department of Science & Technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.
  - (b) While submitting Utilisation Certificate/Statement of Expenditure, the organisation has to ensure submission of supporting documentary evidences with regard to purchase of equipment/capital assets as per the provisions of GFR 2017. Subsequent release of grants under the project shall be considered only on receipt of the said documents.
  - (c) a transparent procurement procedure in line with the Provisions of General Financial Rules 2017 will be followed by the Institute/ Organisation under the appropriate rules of the grantee organisation while procuring capital assets sanctioned for the above


drawing any emoluments/ salary/ fellowship from any other project either supported by DST or by any other funding agency."

14. Failure to comply with the terms and conditions of the sanction order will entail full refund with interest in terms of Rule 231 (2) of GFR 2017.

15. The expenditure involved is debitable to Demand No.84, Department of Science & Technology for the year 2018-19:

3425	2	Other Scientific Research (Major Head)
60	0	Others
60.798	2	International Cooperation (Minor Head)
14	2	Research and Development
14.00.31	:	Grants-in-aid General for the year 2018-19 (Previous: ICD-3425 60 798 12 00 31)

16. This sanction order being 1<sup>st</sup> instalment for implementation of this project, no SE/UC is due from the grantee institution against this project.

17. This issues with the concurrence of IFD vide their concurrence Dy. No. C/2204/IFD 2018-19 dated 21.08.2018

18. As per Rule 234 of GFR 2017, this sanction has been entered at S. No. L.C. Sin the register of grants maintained in the Division.

Tirkey) Scientist 'F

To,

t=

The Pay & Accounts Officer, Department of Science & Technology, New Delhi-110016

Copy to:

\$

- 1. Office of the Principal Director of Audit, AGCR Bldg., IP Estate, New Delhi-110002
- 2. Cash Section (3 copies), DST
- 3. I.F. Division/Accounts Section, DST
- 4. Sanction Folder
- Project File.
- 6. **Registrar,** Department of Information Technology, SRKR Engineering College, Bhimavaram-534204, Andhra Pradesh.
- 7. Dr. R.N.V. Jagan Mohan, Department of Information Technology, SRKR Engineering College, Bhimavaram-534204, Andhra Pradesh.

(Ujjwala T. Tirkey) Scientist 'F'

#### FILE NO. ITS/2018/005199 SCIENCE & ENGINEERING RESEARCH BOARD(SERB) (a statutory body of the Department of Science & Technology, government of India)

5 & 5A, Lower Ground Floor Vasant Square Mall Plot No. A, Community Centre Sector-B, Pocket-5, Vasant Kunj New Delhi-110070

Dated: 21-Feb-2019

ORDER

Subject: Reimbursement of travel grant to Dr. Venu Reddy (Senior Scientist), Nanotechnology Research Center, SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE BHIMAVARAM, Srkr engineering college, china amiram, juvvalapalem road,Bhimavaram west godavari district andhra pradesh, West godavari, Andhra pradesh-634204 for attending "Smart Nanomaterials: Advances, Innovation and Applications, France (10 December, 2018 to 13 December, 2018)" held in "Paris, France".

1. Sanction of the Science & Engineering Research Board (SERB) is here by accorded to the payment of a sum of Rs. 86039/- (Rs. Eighty Six Thousand and Thirty Nine Only) for meeting the expenses incurred towards participating in the above International event.

2. Sanction of the grant is subject to the condition as detailed in Terms & Conditions available at website (www.serb.gov.in and www.serbonline.in ).

3. The expenditure involved is debitable to "Fund for Science & Engineering Research (FSER)".

4. This grant is being reimbursed under the ITS scheme.

5. The Sanction has been issued to SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE BHIMAVARAM, SRKR ENGINEERING COLLEGE, CHINA AMIRAM, JUVVALAPALEM ROAD,BHIMAVARAM WEST GODAVARI DISTRICT ANDHRA PRADESH with the approval of the competent authority under delegated powers on 19 February, 2019 and vide Diary No. SERB/F/11411/2018-2019 dated 21 February, 2019.

6. The release amount of Rs. 86039/- (Rupees Eighty Six Thousand and Thirty Nine only) will be drawn by the Under Secretary of the SERB and will be disbursed by means of RTGS transaction as per their Bank details given below:

Account Name	S.R.K.R.E COLLEGE CHINNAMIRAM
Account Number	37561148967
Bank Name & Branch	State Bank of India Branch Name:Chinna Amiram ; Branch Address: Chinna Amiram, Bhimavaram, West Godavari Dist., Andhra Pradesh, 534204, India
IFSC/RTGS Code	SBIN0020530
Email id of A/C Holder	principal@srkrec.ac.in
Email id of PI	rvenu8@gmail.com

7. It is certified that original boarding passes have been received along with other documents and retained in the Board.

8. In the eventuality of any excess payment arising on account of typographical errors, etc., the excess amount should be refunded immediately to the Science and Engineering Research Board (SERB) by way of an a/c payee cheque in favour of the "Fund for Science & Engineering Research". Non-compliance would lead to the SERB initiating recovery procedures which would also attract applicable penal interest which would be decided by the SERB.

9. In case of any discrepancy you may contact ITS Section at ms.its@serb.gov.in.

(Dr. T Thangaradjou) Scientist E ms.its@serb.gov.in



### No. DST/INT/ISR/P-22/2017

Government of India Ministry of Science and Technology Department of Science & Technology (International Bilateral Cooperation Division)

> Technology Bhavan, New Mehraulli Road New Delhi-110016 Date: 21.08.2018

### ORDER

Subject: Implementation of Indo-Israeli Joint project entitled: "Dissecting Autism Trajectories in Longitudinal Electronic Health Records" coordinated by Dr. R.N.V. Jagan Mohan, Professor, Department of Information Technology, SRKR Engineering College, Bhimavaram-534204, Andhra Pradesh.

Sanction of the President is hereby accorded for incurring an expenditure not exceeding Rs. 29,32,400/- (Rupees Twenty Nine Lakhs Thirty Two Thousand and Four Hundred only) for implementation of the Indo-Israeli joint project entitled "Dissecting Autism Trajectories in Longitudinal Electronic Health Records" coordinated by Dr. R.N.V. Jagan Mohan, Professor, Department of Information Technology, SRKR Engineering College, Bhimavaram-534204, Andhra Pradesh in collaboration with Alal Eran, Senior Lecturer, Department of Life Sciences, Ben-Gurion University of the Negev, Israel for a total duration of 2 years from the date of issue of the sanction order.

2. As per the terms and conditions, agreed by both side, under the project the sending side will bear the cost related to the International air travel, medical insurance, visa charges and other expenses whereas the receiving side shall bear the cost of accommodation only of the visiting scientist. The break-up of approved expenditure is as indicated below:

Items of Expenditure	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	Total
-		<b></b>	
Manpower			
1 RA@ Rs. 36,000/- + 10%HR=39,600/-	4,75,200/-	4,75,200/-	9,50,400/-
1 JRF@ Rs. 25,000/- +10%HRA=27,500/-	3,30,000/-	3,30,000/-	6,60,000/-
Visits from India to Israel :		i	
Number of visits and duration for each visit-	2 visits, 10 days and 30 days	2 visits, 10 days and 30 days	-
International airfare @Rs. 1,60,000/-	3,20,000/-	3,20,000/-	· 6,40,000/-
Local travel in India & Israel from city parent Nearest International Air Port from the Institute	24,000/-	24,000/-	48,000/-
Per Diem @ \$50 per day x 40 days x Rs.68	1,36,000/-	1,36,000/-	2,72,000/-
Visa fee	4,000/-	4,000/-	8,000/-

Overseas medical insurance	4,000/-	4,000/-	8,000/-
Visits from Israel to India :			
Number of visits and duration for each visit	2 visits, 10 days and 30 days	2 visits, 10 days and 30 days	
Accommodation in Guest House@ Rs. 2,500 per day	1,00,000/-	1,00,000/-	2,00,000/-
Contingency	30,000/-	50,000/-	80,000/-
Overhead Charges	33,000/-	33,000/-	66,000/-
Total	14,56,200/-	14,76,200/-	29,32,400/-

3. Sanction of the President is hereby accorded for release of 1<sup>st</sup> instalment amounting to Rs. 11,64,960/- (Rupees Eleven Lakhs Sixty Four Thousand Nine Hundred and Sixty only) to the grantee Institute. The amount of grant will be drawn by the Drawing and Disbursing Officer, DST and will be disbursed to SRKR Engineering College, Andhra Pradesh. The bank details for electronic transfer of funds through RTGS are given below: -

Account Holders Name/ Designation	Principal SRKR Engineering College		
Name of Bank	State Bank of India, JP Road Branch Bhimavaram, West Godavari District, Andhra Pradesh, Pin 534204		
Bank Account Number	62460008072		
IFSC Code	SBIN0020530		

### Condition for placing of grant amount:

11

4. The institute will maintain separate audited account for the project and the amount of grant will be kept in a bank account earning interest. All interests or other earnings against Grants-in aid or advances (other than reimbursement) released to any grantee institution should be mandatorily remitted to the Consolidated Fund of India immediately after finalization of the accounts. Such advances should not be allowed to be adjusted against future releases.

### Conditions for submission of SE/UC and Progress report:

- 5. (a) the grantee organisation will furnish to the Department of Science & Technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.
  - (b) While submitting Utilisation Certificate/Statement of Expenditure, the organisation has to ensure submission of supporting documentary evidences with regard to purchase of equipment/capital assets as per the provisions of GFR 2017. Subsequent release of grants under the project shall be considered only on receipt of the said documents.
  - (c) a transparent procurement procedure in line with the Provisions of General Financial Rules 2017 will be followed by the Institute/ Organisation under the appropriate rules of the grantee organisation while procuring capital assets sanctioned for the above



drawing any emoluments/ salary/ fellowship from any other project either supported by DST or by any other funding agency."

14. Failure to comply with the terms and conditions of the sanction order will entail full refund with interest in terms of Rule 231 (2) of GFR 2017.

15. The expenditure involved is debitable to Demand No.84, Department of Science & Technology for the year 2018-19:

3425	2	Other Scientific Research (Major Head)
60	0	Others
60.798	2	International Cooperation (Minor Head)
14	2	Research and Development
14.00.31	:	Grants-in-aid General for the year 2018-19 (Previous: ICD-3425 60 798 12 00 31)

16. This sanction order being 1<sup>st</sup> instalment for implementation of this project, no SE/UC is due from the grantee institution against this project.

17. This issues with the concurrence of IFD vide their concurrence Dy. No. C/2204/IFD 2018-19 dated 21.08.2018

18. As per Rule 234 of GFR 2017, this sanction has been entered at S. No. L.C. Sin the register of grants maintained in the Division.

Tirkey) Scientist 'F

To,

t=

The Pay & Accounts Officer, Department of Science & Technology, New Delhi-110016

Copy to:

\$

- 1. Office of the Principal Director of Audit, AGCR Bldg., IP Estate, New Delhi-110002
- 2. Cash Section (3 copies), DST
- 3. I.F. Division/Accounts Section, DST
- 4. Sanction Folder
- Project File.
- 6. **Registrar,** Department of Information Technology, SRKR Engineering College, Bhimavaram-534204, Andhra Pradesh.
- 7. Dr. R.N.V. Jagan Mohan, Department of Information Technology, SRKR Engineering College, Bhimavaram-534204, Andhra Pradesh.

(Ujjwala T. Tirkey) Scientist 'F'

### Der Link

Search 🔍 🍹 Log in

### Published: 20 January 2018

Region Based Instance Document (RID) Approach Using Compression Features for Authorship Attribution

<u>N. V. Ganapathi Raju</u> ⊠ & <mark>Someswara Rao Chinta</mark>

<u>Annals of Data Science</u> 5, 437–451 (2018) 92 Accesses | <u>Metrics</u>

### Abstract

Authorship attribution is concerned with identifying authors of disputed or anonymous documents, which are potentially conspicuous in legal, criminal/civil cases, threatening letters and terroristic communications also in computer forensics. There are two basic approaches for authorship attribution one is instance based (treat each training text individually) and the other is profile based (treat each training text cumulatively). Both of these methods have their own advantages and disadvantages. The present paper proposes a new region based document model for authorship identification, to address the dimensionality problem of instance based approaches and scalability problem of profile based approaches. The proposed model concatenates a set of individual 'n' instance documents of the author as a single region based instance document (RID). On the RID compression based similarity distance method is used. The compression based methods requires no pre-processing and easy to apply. This paper uses Gzip compression algorithm with two compression based similarity measures NCD, CDM. The proposed compression model is character based and it can automatically capture easily non word features such as word stems, punctuations etc. The only disadvantage of compression models is complexity is high. The proposed RID approach addresses this issue by reducing the repeated words in the document. The present approach is experimented on English editorial columns. We achieved approximately 98% of accuracy in identifying the author.

This is a preview of subscription content, access via your institution.

### Description Springer Link

Search 🔍 🏾 📜 Log in

### Published: 29 July 2017

### Parallel String Matching with Linear Array, Butterfly and Divide and Conquer Models

<u>S. Viswanadha Raju, K. K. V. V. S. Reddy</u> & <u>Chinta Someswara Rao</u> 🖂

<u>Annals of Data Science</u> 5, 181–207 (2018) 184 Accesses | 2 Citations | <u>Metrics</u>

### Abstract

String Matching is a technique of searching a pattern in a text. It is the basic concept to extract the fruitful information from large volume of text, which is used in different applications like text processing, information retrieval, text mining, pattern recognition, DNA sequencing and data cleaning etc., . Though it is stated some of the simple mechanisms perform very well in practice, plenty of research has been published on the subject and research is still active in this area and there are ample opportunities to develop new techniques. For this purpose, this paper has proposed linear array based string matching, string matching with butterfly model and string matching with divide and conquer models for sequential and parallel environments. To assess the efficiency of the proposed models, the genome sequences of different sizes (10–100 Mb) are taken as input data set. The experimental results have shown that the proposed string matching algorithms performs very well compared to those of Brute force, KMP and Boyer moore string matching algorithms.

This is a preview of subscription content, <u>access via your</u> <u>institution</u>.



LOG IN

SIGN UP

### Image Denoising Using Wavelet Transform Based Flower Pollination Algorithm

🥙 V. Sarella

### **Image Denoising Using Wavelet Transform Based Flower Pollination Algorithm**



### B. V. D. S. Sekhar, S. Venkataramana, V. V. S. S. S. Chakravarthy, P. S. R. Chowdary and G. P. S. Varma

**Abstract** Image Denoising is a consistent problem from long period of time and still a challenging task for researchers. There evolved many techniques for image denoising which involves filtering techniques in spatial domain, Transform techniques in transform domain (Sekhar et al. in IRECOS 10(10):1012–1017, 2015 [1]), and more recently evolutionary computing tools (ECT) and genetic algorithms proved more effective in denoising of images. There are many ECT available which can be applied for denoising problem (Sekhar et al. in JGIM 25(4) 2017, [2]). In this paper we made an attempt to Denoise both color and grayscale images by applying a new ECT which emerged out with more efficient results. Peak Signal to noise ratio (PSNR), Structural Similarity Index Metric (SSIM), Mean Structural Similarity Index Metric (MSSIM), etc., are considered in this paper as Image quality Assessment metrics. Comparison of proposed method is also compared with state-of-the-art techniques.

**Keywords** Image denoising • Evolutionary computing tools (ECT) Flower pollination algorithm (FPA) • Optimization • Wavelet transforms

Peak signal to noise ratio (PSNR) · Structural similarity index metric (SSIM) Mean structural similarity index metric (MSSIM)

DOWNLOAD PDF

B. V. D. S. Sekhar  $(\boxtimes) \cdot$  S. Venkataramana  $\cdot$  G. P. S. Varma



Search Q Log in  $\Box$ 



### Wide Band Sierpinski Carpet Rectangular Microstrip Fractal Antenna Using Inset-Fed for 5G Applications

Basheer Ali Sheik 🗠, P. V. Sridevi & P. V. Rama Raju

Conference paper | First Online: 03 November 2018

684 Accesses | 1 Citations

Part of the Lecture Notes in Electrical Engineering book series (LNEE, volume 521)

### Abstract

The objective of this paper is to propose a wide band Sierpinski carpet rectangular microstrip fractal antenna fed with inset-fed for 5G applications. This proposed antenna design consists of the third iteration of Sierpinski carpet fractal on the rectangular patch and partial ground structure print on both sides of FR4 epoxy material with a dielectric constant of 4.4 and 0.4 mm thickness at 28 GHz. The simulated result shows a wide impedance bandwidth of 9.16 GHz and 8.43 dB gain. It can further be configured to an array of fractals for high gain and

bandwidth, frequency selective surface (FSS), and

radar applications.

Keywords

Fractal antenna Sierpinski carpet

Wide band Inset-fed and partial ground

This is a preview of subscription content, <u>access via</u> <u>your institution</u>.

✓ Chapter	<b>EUR 24.95</b> Price excludes VAT (India)
• DOI: 10.1007/978-981-13-1906-8_39	
Chapter length: 10 pages	
Instant PDF download	
Readable on all devices	
• Own it forever	
• Exclusive offer for individuals only	
• Tax calculation will be finalised during	checkout
	1
Buy Chapter	
✓ eBook	EUR 192.59
	Price includes VAT (India)
<ul> <li>ISBN: 978-981-13-1906-8</li> </ul>	
Instant PDF download	
Readable on all devices	
• Own it forever	
• Exclusive offer for individuals only	
• Tax calculation will be finalised during	checkout
	,
Buy eBook	
✓ Softcover Book	EUR 229.99
	Price excludes VAT (India)
	Da == 92

### 30/05/2022, 22:25



Learn about institutional subscriptions

### References

- 1. Balanis CA (1997) Antenna theory, analysis, and design. Wiley, New York
- Garg R, Bhartia P, InderBahl, Ittipiboon A (2000) Microstip antenna design handbook. Artech House
- Carver KR, Mink JW (1981) Microstrip antenna technology. IEEE Trans Antennas Propag 29(1):2–

24

- Derneryd G (1978) A theoretical investigation of the rectangular microstrip antenna element. IEEE Trans Antennas Propag 26(4):532–535
- 5. Basilio LI, Khayat MA, Williams JT, Long SA (2001) The dependence of the input impedance on feed position of probe and microstrip line-fed patch antennas. IEEE Trans Antennas Propag 49(1):45–47
- 6. Hu Y, Jackson DR, Williams JT, Long SA, Komanduri VR (2008) Characterization of the input impedance of the inset-fed rectangular microstrip antenna. IEEE Trans Antennas Propag 56(10):3314–3318
- 7. Sheik BA, Sridevi PV, Rama Raju PV (2016) Enhancement of gain and directivity in inset fed patch antenna using HFSS. IJCTA 10:91–105
- Li D, Mao J-F (2012) A koch-like sided fractal bowtie dipole antenna. IEEE Trans Antennas Propag 60(5):2242–2251
- 9. Jahromi MN, Falahati A, Edwards RM (2011) Bandwidth and impedance-matching enhancement of fractal monopole antennas using compact grounded coplanar waveguide. IEEE Trans Antennas Propag 59(7):2480–2487

10. Nobrega CDL, Da Silva MR, Silva PHDF, DAssuncao AG, Siqueira GL (2015) Simple, compact, and multiband frequency selective surfaces using dissimilar sierpinski fractal elements. Int J Antennas Propag 2015:5. Article ID 614780

- Yu Z, Yu J, Ran X, Zhu C (2017) A novel ancient coin-like fractal multiband antenna for wireless applications. Int J Antennas Propag 2017:10. Article ID 6459286
- Thanh NT, Yang Y, Lee KY, Hwang KC (2017) Dual circularly-polarized spidron fractal slot antenna.
   Electromagnetics 37(1):40–48
- 13. Khinda JS, Tripathy MR, Gambhir D (2017) Multiedged wide-band rectangular microstrip fractal antenna array for Cand X-band wireless applications. J Circ Syst Comput 26(4). Article ID1750068
- 14. Dorostkara MA, Azima R, Islama MT (2013) A novel Γ-shape fractal antenna for wideband communications. Proc Technol 11:1285–1291. Elsevier

15. Haraz OM, Elboushi A, Alshebeili SA, Sebak AR

(2014) Dense dielectric patch array antenna with improved radiation characteristics using EBG ground structure and dielectric superstrate for future 5G cellular networks. IEEE Access 2:909– 913

- 16. Chen Z, Zhang YP (2013) FR4 PCB grid array antenna for millimeter-wave 5G mobile communications. IEEE MTT-S (IMWS-BIO)workshop
- 17. Hu CN, Chang DC, Yu CH, Hsaio TW, Lin DP (2016) Millimeter-wave microstrip antenna array design and an adaptive algorithm for future 5G wireless communication systems. Int J Antennas Propag 2016:10. Article ID 7202143
- **18.** Sarang P, Rohokale W (2015) Multiband smart fractal antenna design for converged 5G wireless networks. IEEE-ICPC
- 19. Sheik BA, Sridevi PV, Rama Raju PV (2017) Enhancement of antenna parameters of rectangular MSA with optimized Inset Fed Using HFSS. In: Proceeding of ICACS-2K17, Oct 2017, pp 173–177

### Author information

Page 86

### Authors and Affiliations

### **Department of Electronics and Communication**

Engineering, Andhra University College of

Engineering (Autonomous), Visakhapatnam,

Andhra Pradesh, India

Basheer Ali Sheik & P. V. Sridevi

**Department of ECE, SRKR Engineering College** 

(Autonomous), Bhimavaram, Andhra Pradesh,

### India

P. V. Rama Raju

Corresponding author

Correspondence to Basheer Ali Sheik.

**Editor information** 

**Editors and Affiliations** 

School of Electrical Sciences, Indian Institute of

### Technology Bhubaneswar, Bhubaneswar, Odisha,

### India

Dr. Ganapati Panda

School of Computer Engineering, KIIT Deemed to

be University, Bhubaneswar, Odisha, India

Dr. Suresh Chandra Satapathy

**Electronics and Communication Engineering**,

Gayatri Vidya Parishad College of Engineering

(Autonomous), Visakhapatnam, Andhra Pradesh,

### India

Dr. Birendra Biswal

**Electronics and Communication Engineering**,

University of Pretoria, Pretoria, South Africa

Prof. Ramesh Bansal

### **Rights and permissions**

**Reprints and Permissions** 

### Copyright information

© 2019 Springer Nature Singapore Pte Ltd.

### About this paper

### Cite this paper

Sheik, B.A., Sridevi, P.V., Rama Raju, P.V. (2019). Wide Band Sierpinski Carpet Rectangular Microstrip Fractal Antenna Using Inset-Fed for 5G Applications. In: Panda, G., Satapathy, S., Biswal, B., Bansal, R. (eds) Microelectronics, Electromagnetics and Telecommunications. Lecture Notes in Electrical Engineering, vol 521. Springer, Singapore. https://doi.org/10.1007/978-981-13-1906-8\_39

### <u>.RIS</u> <u>↓</u> <u>.ENW</u> <u>↓</u> <u>.BIB</u> <u>↓</u>

### DOI

https://doi.org/10.1007/978-981-13-1906-8\_39

Published	Publisher Name	Print ISBN
03 November	Springer,	978-981-13-1905-
2018	Singapore	1
Online ISBN	eBook Packages	
978-981-13-1906-	<u>Engineering</u>	
8	Engineering (R0)	

Not logged in - 103.49.53.5

AICTE Electrical & Electronics & Computer Science Engineering (3000684219) - AICTE Mechanical Engineering e-Jour (3000684257) - SRKR Engineering College (2000691481) - INDEST-AICTE-Level III (3000168247) - SRKR Engineering College (3001747919) **SPRINGER NATURE** 

© 2022 Springer Nature Switzerland AG. Part of Springer Nature.





### **Comparison of Inset-Fed Rectangular and E-Shaped Antenna Arrays For LTE & Wi-Fi Applications**

Basheer Ali Sheik Research scholar Department Of Electronics And Communication Engineering, Andhra University College of Engineering(A), Visakhapatnam, Andhra Pradesh, India. Email: <u>basheeralis@yahoo.com</u> Dr. P V Sridevi Professor Department Of Electronics And Communication Engineering, Andhra University College of Engineering(A),Visakhapatnam, Andhra Pradesh, India *Email: pvs6\_5@yahoo.co.in* 

Abstract: Recently, long-term evolution (LTE) advanced has been dominated as the next-generation wireless communication standard, which is aimed at higher peak data rates, close to 4 Gb/s. This is accomplished by designing an antenna with better antenna parameters (gain, directivity etc.,) so that the signal-to-noise ratio can also be improved. The main objective of this paper is to get improved antenna parameters by comparing the rectangular and E-shaped antenna arrays, which are useful for LTE33-41 (1,900-2,690MHz), Bluetooth (2,400-2,483.5MHz),GPS (L1, L4), BDS (B1), GLONSS (L1), GALILEO (E1, E2), WLAN (802.11b/g/n: 2.4-2.48GHz) applications. Initially this paper is designed as a single microstrip patch antenna and after assessing the outcomes of parameters; it is then transformed into a 1X2 linear array and a 1X4 linear array. This transformation increases directivity, gain and better radiation pattern since the array of antenna gives better antenna parameters than single antenna. The Design and simulation of this rectangular and E-shaped antenna arrays are implemented at 2.4 GHz with 2.2 permittivity of RT Duroid using CST Microwave Studio. The rectangular array gives high gain and directivity than E-shaped array but Eshaped array is applicable to multiple tasks (it is resonated more than once) than rectangular array (single resonated antenna).

Keywords: Microstrip patch antenna, rectangular microstrip antenna, E-shaped microstrip antenna, 1x2 linear array antenna, 1x2 linear array antenna and antenna gain, directivity and resonate frequency.

### I. INTRODUCTION

The antenna plays a vital role for wireless communication today. The antennas are of various types like wired, aperture and microstrip antennas (MSA). Among these, MSA has low weight, low cost and easy to fabricate, but offers low gain and directivity [1]-[2]. The best linear resonator is the rectangular MSA, where the resonated modes have been affected by feed point (location), dimensions and input impedance (mutual coupling conductance) of patch [3]. An experimental investigation shows that the dependence of the input impedance (input resistance) on the feed position of a patch antenna differs by using a probe or a inset feed (microstrip line feed) based on the current distribution as cosine square function. The radiation resistance decreases rapidly from edge to center of patch, so the inset fed gives better results [4]. In this the input impedance form of the inset-fed rectangular microstrip patch antenna was

Dr. P V Rama Raju Professor & HOD Department of Electronics And Communication Engineering, SRKR Engineering College(A), Bhimavaram, Andhra Pradesh, India. Email: pvrraju50@gmail.com

investigated. The input impedance has been major problem of microstrip line feed. This problem is fixed with an increase in the notch width and decrease in the notch depth, but increasing either the notch width or depth increases the cross-polarization level [5]. The reconfigurable E-shaped antenna is capable of efficiently switching the dual frequency bands at the same time is without the need of any external matching network. This structure is simple and consists of a single-layer inset-feed patch and three RF switches (PIN diodes) placed at appropriate locations to reconfigure the frequency bands. This design is analyzed for S, C and X bands with inset fed. Hence it is suitable for satellite links and WiMax [6]. The Eshaped antenna is thin and compact with the use of low dielectric constant substrate material and wide band (5.33-5.71 GHz frequency band). These features are very useful for wireless communication equipment and multipurpose. The resonant frequency of the second resonant mode can be tuned without affecting the resonant frequency of the fundamental resonant mode by varying slots width and length of patch [7]. These papers are discussed based on inset fed single patch antenna.

Now turning to array antennas, the array antenna is based on two designs, one is resonator design and the second one is feed network design. The antenna parameters get better when feed network designed effectively [8]. The novel optimization methods applied on inset-fed leaner polarized rectangular antenna array gives high performance of antenna parameters [9]. The paper presents an analysis for optimal design of switched beam-forming applied to a linear array for wide coverage and high signal to Noise ratio (SNR) for wireless communication systems [10]. The Wireless antennas (LTE, Wi-Fi, etc.,) are not very efficient as they suffer from poor spatial reuse, high collisions, decreased throughput and are not energy efficient. These problems have been reduced with narrow-beam radiation (i.e., very high directivity). This is possible with antenna array. This paper discussed about rectangular, triangular and E-shaped array antennas to get high directivity for Wireless Sensor Networks [11]. The E-shaped antenna is mostly applicable to wide and dual bands, high



Search Q 📜 Log in



Smart Computing and Informatics pp 221–231

### Design and Analysis of Compact Circular Half-Ring Monopole Antenna with DGS

- <u>S. S. Mohan Reddy</u> , P. Mallikarjuna Rao, B. Prudhvi Nadh,
- <u>B. T. P. Madhav</u> & <u>K. Aruna Kumari</u>

Conference paper | First Online: 21 December 2017

1055 Accesses

Part of the <u>Smart Innovation</u>, <u>Systems and Technologies</u> book series (SIST, volume 77)

### Abstract

A compact circular monopole shaped antenna is designed to operate at the dual band, and it is modified as half circle strip loaded circular monopole antenna with defected ground structure (DGS). The proposed antenna consisting of the combination of circular radiating element and half circle strip on the top side of the FR4 substrate material with permittivity 4.4. The bottom side a dumbbell-shaped DGS is incorporated to enhance the antenna bandwidth parameter. The proposed antenna is Page 93



Search Q 📜 Log in



### Weighted Transformation and Wavelet Transforms-Based Image Resolution and Contrast Enhancement

<u>N. Prasanthi Kumari</u>, <mark>T. V. Hyma Laksmi</mark> <sup>(27)</sup>, D. Bhavani & G.

<u>Mohana Durga</u>

Conference paper | First Online: 11 April 2018

**2522** Accesses **2** <u>Citations</u>

Part of the <u>Advances in Intelligent Systems and Computing</u> book series (AISC,volume 624)

### Abstract

Proposed weighted transformation and wavelet transforms-based image resolution and contrast enhancement can be described in two phases. In first phase, input low-resolution image is resolutionenhanced using lifting–stationary wavelet transforms. In this process, input image is decomposed into lowfrequency and high-frequency components using lifting and stationary wavelet transforms, and highfrequency components are bi-cubic interpolated to improve the resolution. Finally, inverse lifting wavelet Page 94



Search Q 📮 Log in



### Arc-Shaped Monopole Liquid-Crystal Polymer Antenna for Triple-Band Applications

<u>S. S. Mohan Reddy</u> <sup>⊡</sup>, <u>B. T. P. Madhav</u>, <u>B. Prudhvi nadh</u>, <u>K.</u> <u>Aruna Kumari</u>, <u>M. V. S. Praveen</u>, <u>M. Hemachand</u> & <u>E.</u>

<u>Mounika</u>

Conference paper First Online: 26 January 2018

1010 Accesses

Part of the <u>Lecture Notes in Electrical Engineering</u> book series (LNEE,volume 471)

### Abstract

An arc-shaped compact monopole antenna with defected ground structure is designed for triple-band applications with gain enhancement are observed in this chapter. The antenna structures are implemented to achieve triple-band properties. By using linear array technique, characteristics like operating bandwidth, antenna gain, and efficiency were analyzed and improved for the designed antennas. The designed antenna has better radiation 5/30/22, 1:43 PM



A brain tumor is a mass of cells in your brain that are not normal.Some brain tumors contain cancer and others don't: Brain tumor include both, benign and malignant forms. Benign brain tumors don't have cancer cells. Malignant brain tumors have cancer cells. Differentiating malignant and benign cases is a hard task even for experienced specialists. This work presents how to extract the characteristics and features of tumor image by general segmentation methods for malignant risk computation and presents the use of digital watermarking for applications of automated tumor image analysis. Here personal information such as name, age, gender, location, ADHAAR number, contact number etc., and tumor information such as tumor types, area of the tumor, severity, and any other useful information are embedded to the tumor image. Encrypting that image with well-known encryption algorithms is also possible to avoid unnecessary nuisance from information hackers.



### JARDCS

Home Table of Contents Special Issues



A circular disk monopole ultra wide band antenna with triple band-notched characteristics

C.H. Suguna, G.V.S. Padma Rao, J. Chandrashekhar Rao

#### **Abstract:**

A compact circular disk UWB antenna with triple band notched characteristics is proposed. The proposed triple band notched antenna is designed by using FR4 substrate of permittivity 4.4. The proposed antenna occupies the area of 26x31x1.6mm3.The width of micro strip is 3mm so that, antenna covers from 2.99 to 11.24 GHz. A OO shaped slot is etched on the circle, it produces notch band from 3.27-3.75GHZ (Wi-Max).If two similar OO shaped radiators are used then the notch band is from 5.11-6.08GHZ (WLAN).If OUO-shaped slot is etched on the micro strip it produces a notch band from 7.90-8.40GHZ(X- band).The simulated results shows the gain is positive and VSWR<2 over the entire coverage band except the 3 notch bands.

Issue: 05-Special Issue

Year: 2018

Pages: 1010-1016

**Purchase this Article** 

Copyright © 2017 - All Rig	hts Reserved - JARDCS
----------------------------	-----------------------

	Username
	Password
	Login
Quick L	inks
Home	
Table o	f Contents
Special	Issues

Scopus SJR

Sign In

(

SCImago Journal & Country Rank

### Power Flow Analysis of Three Phase Unbalanced Radial Distribution Networks with Multiple DGs

### <sup>1</sup>R. Satish, <sup>2</sup>P. Kantarao, <sup>3</sup>K. Vaisakh

<sup>1</sup>Assistant Professor, <sup>2</sup>Proffessor, <sup>3</sup>Proffessor Depart of Electrical and Electronics Engineering ANITS, Visakhapatnam, AP

*Abstract*: As the installations of distributed generators (DGs) within distribution systems increasing, power flow analysis of unbalanced distribution networks needs special algorithms to handle multiple sources. In this paper, the development of an unbalanced three phase power flow algorithm which can handle multiple sources is described. According to the control and characteristics of output power, DGs can be specified as constant power factor model and constant voltage model or variable reactive power model. In this paper, these two models are all derived and integrated into the proposed load flow method. This load flow is capable of switching the DG mode of operation from constant voltage to constant power factor in the presence of multiple DGs. This algorithm requires dynamic data structure (DDS) to store the details of the branches. The algorithm uses basic principles of circuit theory and can be easily understood. This algorithm has been tested with IEEE 8 bus and IEEE 25 bus unbalanced radial distribution networks and the results are quite promising and are in agreements with the literature.

Index Terms: unbalance radial distribution networks, power flow, distributed generation.

### I. INTRODUCTION

Distribution automation & optimization needs fast and efficient power flow which needs to be run repeatedly. The distribution network is inherently an unbalanced network due to a large number of unequal single-phase loads and the unsymmetrical spacing between the conductors. Due to these factors, conventional power flow algorithms used for transmission system studies do not show good convergence properties for distribution systems. Since dispersed generators are becoming prevalent in distribution systems, integrating multiple DGs in to distribution power flow algorithm has become an important task. Depending on the characteristics and control status of a generator, it may be operated in one of the following modes:

- 1. To output power at fixed real and reactive power.
- 2. To output power at a specified power factor.
- 3. To output power at a specified terminal voltage (or) variable reactive power.

The generator operating in first two modes can be equivalently represented as PQ node model, which require a little treatment in the power flow algorithm and the third mode of operation is well represented as PV node model. This model needs some special procedure in the load flow algorithm for maintaining its voltage magnitude and to monitor its reactive power flow capability. A lot of work has been done for power flow solution of balanced and unbalanced redial distribution networks.Cheng and

A lot of work has been done for power flow solution of balanced and unbalanced redial distribution networks. Cheng and Shirmohammadi [11] proposed a load flow solution for real-time distribution system and it gives some initial discussions on a PV node concept in unbalanced power flow.

In this paper we developed an unbalanced distribution power flow algorithm using Dynamic Data Structure (DDS) and PV node sensitivity matrix. This algorithm can handle multiple DGs for their both modes of operation (PV and PQ). This algorithm is tested for the impact of DGs on the two unbalanced radial test systems by considering all the loads as constant power loads and the results are presented. However, this algorithm can also handle composite load modeling.

### **II. UNBALANCED POWER FLOW**

The proposed unbalanced power flow algorithm uses Dynamic Data Structure (DDS) to store the details of the branches.



Fig. 1 a simple radial network with several laterals

### A Novel Multilevel Inverter Configuration with Reduced Components

Hemanth Kumar Raju A Department of EEE SRKR Engineering College Bhimavaram, India alluri.hemanth203@gmail.com

Harish Kumar Varma G Department of EEE SRKR Engineering College Bhimavaram, India gadiraju.harish@gmail.com

Abstract—Multilevel inverters are rapidly growing field in the area of Power Electronics for high power medium voltage control applications. High voltages can be generated using these devices with minimum THD at lower rating which makes it feasible for industries. In this paper, a new Multilevel Inverter (MLI) topology is presented with minimum number of switches and DC voltage sources to produce high output voltage levels. Cascaded version of MLI is analyzed and two algorithms for selection of DC sources are discussed. This topology is controlled by using Phase Opposition Disposition (POD) technique. The performance of this topology was analyzed through MATLAB/Simulink.

#### Keywords—New Multilevel Inverter, Cascaded unit, Selection of DC sources, POD technique, Modeling of switching pulses.

#### I. INTRODUCTION

Currently Multi-Level Inverters (MLI) are playing key role in Renewable energy conversion systems, thus most of the research work is going on the MLI topologies with minimum number of switches and DC sources to produce higher voltage levels with minimum harmonic content [1]. Basic Inverters with 2 levels are introduced in the year 1975. Later, Multilevel inverters with minimum 3 output levels are introduced in the year 1981 by Nabae [2], and these are commonly used in Flexible AC Transmission Systems (FACTS), High-voltage Direct Current (HVDC), Train traction, Wind mills, Energy conversions [3], Large motor drives, Harmonic/Reactive power compensation [4]. Classical Multilevel converters are diode clamped converter [2], Flying capacitor converter [5] and Cascaded H-bridge converter [6]. Among the conventional topologies cascaded H-Bridge is most advantageous in terms of higher output levels with few number of semiconductor switches.

In multilevel inverters no specific topology can provide unique end solution to all the applications because of its intrinsic characteristics. So researcher continues to evolve newer topologies with an application oriented approach. Many Novel multilevel inverters topologies were proposed by K.S.S. Prasad Raju Department of EEE SRKR Engineering College Bhimavaram, India kalidindi.prasadraju@gmail.com

Dr. K. Vaisakh Electrical Department AU College of Engineering Visakhapatnam, India vaisakh\_k@yahoo.co.in

different authors. Each topology has some advantages and disadvantages in terms of the number of component, value of D.C sources, output voltage levels and blocking voltage on switches. The presented topologies in [7] have a 7-level output with six switches and two D.C Sources of different values. In [8] the topology has 7-level output with nine switches. In [7], [8] algorithms were discussed to determine the magnitudes of D.C sources.

This paper is organized as follows; a New Multilevel Inverter basic topology and extended versions was presented in section II, Algorithms to determine DC voltage source were discussed in section III as well as the modulating technique to control these converters are in section IV and Simulation results were presented in final section.

#### II. TOPOLOGY

The basic unit topology is illustrated in Fig. 1 and it consists of six unidirectional switches  $(S_1, S_2, \overline{S_1}, \overline{S_2}, S_p, S_q)$ , two bidirectional switches  $(S_a, S_b)$  and four DC voltage sources [9]. Right most side of the two sources must have same value  $E_1$  and Left most side of the two sources must have same value  $\overline{E_1}$ . Table.1 indicates output voltage levels for different switching states.



Fig. 1. Basic unit topology

#### 978-1-5386-0814-2/17/\$31.00 ©2017 IEEE

### A Modified Reverse Voltage Inverter Topology with Inverted Sine Wave Carrier PWM Technique

Sidharth Sabyasachi Research Scholar Student Member IEEE Department of Electrical Engineering VNIT, Nagpur, India sidharth.mana@gmail.com Vijay B. Borghate Professor Member IEEE Department of Electrical Engineering VNIT, Nagpur, India vijay borghate@rediffmail.co

### <u>m</u> Abstract

In this paper, a single phase modified reverse voltage inverter topology is presented. It can operate both in symmetrical and asymmetrical configurations. It consists of one upper sub-module (USM), one lower sub-module (LSM), and in between these two, half-bridge cells (HBCs) are cascaded to form level generation block (LGB) for unipolar voltage levels generation. An H-bridge is used as a reverse voltage block (RVB) to convert into bipolar voltage levels including zero level. The level of voltage can be increased by increasing the number of HBCs in LGB. The Inverted sine carrier pulse width modulation (ISCPWM) technique is used to generate the gate pulses required for the power switches. The various comparative analyses are provided with other single phase topologies. The proposed topology results in the reduction of number of power switches with higher voltage levels and improved power quality. Experimental results are provided to validate the circuit operation.

**Keywords:** single phase inverter, multilevel inverter, Inverted sine carrier PWM.

#### I. INTRODUCTION

Multilevel inverter (MLI) is playing essential role in the field of power electronics due to the huge demand of power. The various application areas like renewable energy system, FACTS, HVDC, motor drives, where it is essential to use reliable power electronic circuits with improved power quality. Power converter has been developed in 1975 for converting direct current to alternating current [1]. As the time passed on, the various topologies came into picture with different structures. The design of multilevel inverter involves various factors such as switch count, source count, gate drive count, capacitor count, application, power quality issues, etc. The switch count involves diodes, MOSFETs, IGBTs with unidirectional or bidirectional current flow. Accordingly, the gate drive requirement is needed for operating those switches. The sources availability involves two categories i.e. symmetrical and asymmetrical configurations. Capacitor requirement depends on the source availability and Santosh Kumar Maddugari Research Scholar Student Member IEEE Department of Electrical Engineering VNIT, Nagpur, India <u>msanthu245@gmail.com</u>

Raghavendra R. Karasani Asst. Professor Member IEEE Department of Electrical Engineering SRKR, AP, India raghu.vnitnagpur@gmail.com

application. The development of a new Neutral point clamped (NPC) PWM inverter increased the adoption of inverter in various applications [2]. For higher power conversion, voltage source inverter is designed where voltage sharing across switches is possible due to the series connection of switches [3]. Keeping in view of increasing the use of multilevel inverters, various review papers have been published which describe the various developed circuit topologies, modulation techniques and possible applications [4]-[7]. For applications like power generation and transmission systems, modular multilevel converter (MMC) is designed for wide power range [8]. A cascaded symmetric MLI topology has been developed which carries single source unit and double source unit for the reducing power electronic components [9]. Asymmetric multilevel inverter has also been proposed where dual dc input port is there, one for low voltage and other for high voltage [10]. It reduced the conversion stage and hence, efficiency has been improved. The cascaded asymmetric MLI topology reduces the component count for higher voltage levels [11]-[12]. By making series and parallel combination of sources, the output voltage level can be increased with less switch count for higher power applications [13]. The various cascaded multilevel voltage source inverter topologies, operating both in symmetrical and asymmetrical mode, have been developed for higher voltage levels with reduced component count in [14]-[18]. Multilevel current source inverter topology also proposed with both type of source configurations focusing higher voltage levels with reduced dc current source count and switch count [19]. Switch-Ladder topology is proposed with optimal design using bidirectional switch in [20]. The switch-diode topology for cascaded MLI also proposed with reduced switch count [21]. For optimal voltage THD, various methods have been approached [22]-[23]. For renewable energy applications, cascaded MLI topologies have been reported in [24]. By using PWM modulation technique, multilevel inverters are proposed for motor drive applications [25]. The different modulation strategies like switching frequency optimal PWM control, simplified space vector modulation technique etc., have been applied to the inverter topologies for improving the power

### A Fault Tolerant Cascaded Multilevel Inverter Topology for Open Circuit Faults in Switches

Santosh Kumar Maddugari<sup>\*1</sup>, Vijay B. Borghate<sup>†</sup>, Sidharth Sabyasachi<sup>\*2</sup> and Raghavendra R. Karasani<sup>‡</sup> \*Research Scholar, Student Member IEEE, Department of Electrical Engineering, VNIT, Nagpur, India.

Email: msanthu245@gmail.com<sup>1</sup>, sidharth.mana@gmail.com<sup>2</sup>

<sup>†</sup>Professor, Member IEEE, Department of Electrical Engineering, VNIT, Nagpur, India.

Email: vijay\_borghate@rediffmail.com

<sup>‡</sup>Assistant Professor, Member IEEE, Department of Electrical Engineering, SRKR, A.P, India. Email: raghu.vnitnagpur@gmail.com

*Abstract*—This paper proposes cascaded multilevel inverter topology that sustains open circuit faults in all switches. The basic unit of proposed circuit is designed with four unidirectional and two bidirectional switches to produce a five level output. It maintains the output voltage for an open circuit fault in any one of the bidirectional switch and the output falls to three levels for an open circuit fault in any one of the unidirectional switches. The proposed circuit is simulated using MATLAB/SIMULINK and a hardware prototype is developed to validate the theoretical and simulation claims.

#### I. INTRODUCTION

Electric vehicle is the future form of clean transportation and the major infrastructural need of an electric vehicle is a charging station. Charging station based on solar energy is a perfect solution to make the system cleaner. The availability of multiple sources in case of solar energy enables multilevel inverters as most suitable inverters for solar power applications.

Conventionally, there are three basic types of multilevel inverters as Neutral Point Clamped (NPC) [1], Flying capacitor (FC) [2] and Cascaded H Bridge (CHB) [3]. These inverters were very popular for their modular structure, ease in control, higher efficiency and reduction in filter circuitry [4], [5]. For higher levels in output voltage, the switching device count, loss and the cost of the system are increased. To address these issues, various reduced switch topologies [6] are published. But, to synthesize a specific level in the output voltage, the possible switching combinations are limited and hence, the fault in any part of the inverter leads to complete shutdown of the system. This greatly affects the reliability of the inverter and thereby system is prone to isolation in case of faults in inverters.

To address this issue of reliability, various fault tolerant topologies are proposed [7]. A conventional Cascaded H-Bridge (CHB) inverter is added with a bidirectional switch or relay at the output of each bridge to isolate the faulted bridge from the main circuit [8]. The addition of hardware elements such as relays, and their control increases the cost of the system. Another solution is proposed to avoid use of additional hardware in case of CHB by enabling either the top two switches or the bottom two switches to isolate the

fault in a switch or source [9]. This increases the thermal stress on the switches as they are continuously operated. The basic single phase NPC structure is made fault tolerant by replacing the clamping diodes with the active switching elements [10]. The modified three phase active NPC structure is presented in [11] with inclusion of bi-directional switches. A hybrid inverter is proposed in [12] by the combination of one leg of Diode Clamped Inverter (DCI) and one leg of CHB with a bidirectional switch. This inverter addresses the source faults and switch faults apart from maintaining the charge balance. But, proposes switches in place of clamping diodes to overcome faults in any switch of the inverter. This increases the count of overall number of switches and thereby cost. A FC based fault tolerant structure is proposed in [13], [14]. Though, the FC topology has the feature of fault ride-through, the increase in number of semiconductor devices and capacitor balancing problems are the issues of concern.

To overcome these issues, this paper proposes a reliable inverter topology that is modular, uses limited number of switches and provides fault tolerance for all switches and sources. Short circuit faults in switches are catastrophic faults and need additional circuitry to protect the system [15]. Hence, open circuit faults in switches are considered for analysis.

II. PROPOSED INVERTER CIRCUIT



Fig. 1. Proposed single phase five level inverter basic module.

### A Modified Three Phase 5-Level Symmetrical Multilevel Inverter Topology

Raghavendra Reddy Karasani Assistant Professor, *Member IEEE* Department of EEE Sagi Ramakrishnam Raju Engineering College Bhimavaram, India raghu.vnitnagpur@gmail.com

Vijay. B. Borghate Professor, *Member IEEE* Department of Electrical Engineering Visvesvaraya National Institute of Technology Nagpur, India vijay\_borghate@rediffmail.com

*Abstract*—A modified three phase symmetrical 5-level multilevel inverter structure, derived from a propounded auxiliary (AUX) inverter leg, is presented. The switch count and gate driver requirements are reduced compared to conventional topologies. An attempt is made to optimize the source requirement. The low switching frequency Selective Harmonic Elimination (SHE) method based on Bee algorithm is employed for generating gating signals. Simulations analysis is accomplished by MATLAB/SIMULINK. To support the simulation results, experiment is conducted on a low power prototype.

Keywords— Three phase inverters, multilevel inverter, Harmonic Elimination, Symmetrical topologies.

### I. INTRODUCTION

The attractive feature of multilevel inverters (MLIs) is production of staircase voltage waveform, close to sinusoidal. The reduced change in output voltage (dv/dt) results in improved total harmonic distortion (THD). Further, the voltage stresses on power switching devices, switching losses decreases enabling to achieve higher efficiency. The enhancement in voltage levels with reduced number of semiconductor switches in the multilevel inverter topologies has drawn huge interests in the industry and academia. Many past publications have proposed various topologies with reduced semiconductor switches. The reduction in semiconductor switches further reduces gate driver requirements and reduces the switching losses. Many single phase symmetrical and asymmetrical topologies are published focussing on less switch count. There are various applications of multilevel inverters ranging from FACTS, voltage source converter high voltage direct current (VSC-HVDC) systems, PV systems and aircraft electronic systems. Three basic

Sidharth Sabyasachi Research scholar *Student member IEEE*, Department of Electrical Engineering Visvesvaraya National Institute of Technology Nagpur, India <u>sidharth.mana@gmail.com</u>

Santosh Kumar Maddugari Research scholar, *Student member IEEE* Department of Electrical Engineering Visvesvaraya National Institute of Technology Nagpur, India <u>msanthu245@gmail.com</u>

multilevel inverters (MLIs) diode clamped, flying capacitor, and cascade H-bridge (CHB) multilevel inverters are well known. The wide variety of multilevel structures reported in the literature show a clear edge over bi-level converters [1]-[2]. The MLI structures are complex due to usage of the more number of power switches and their driver requirements. To overcome these issues single phase MLIs with reduced switches are reported in [3]-[4]. Extending the single phase structure for three phases, the circuit and control become complex. The complexity issue for three phases is addressed in [5]-[8].

A modified three phase symmetrical MLI topology is proposed here with decreased number of same voltage rating power electronic switches and gate driver requirements. The proposed one can be generalized to high voltage applications by synthesizing more voltage levels in its output. This paper adopts SHE method because of getting more fundamental voltage, i.e. high utilization of the DC-link and lower losses.



Fig. 1. Proposed three phase five level MLI topology.

### JPE 18-1-6

### Fault Tolerant Operation of CHB Multilevel Inverters Based on the SVM Technique Using an Auxiliary Unit

B. Hemanth Kumar<sup>†</sup>, Makarand M. Lokhande<sup>\*</sup>, Raghavendra Reddy Karasani<sup>\*\*</sup>, and Vijay B. Borghate<sup>\*</sup>

<sup>†,\*</sup>Depatrment of Electrical Engineering, Visvesvaraya National Institute of Technology (VNIT), Nagpur, India <sup>\*\*</sup>Sagi RamaKrishnam Raju (SRKR) Engineering College, Bhimavaram, India

#### Abstract

In this paper, an improved Space Vector Modulation (SVM) based fault tolerant operation on a nine-level Cascaded H-Bridge (CHB) inverter with an additional backup circuit is proposed. Any type of fault in a power converter may result in a power interruption and productivity loss. Three different faults on H-bridge modules in all three phases based on the SVM approach are investigated with diagrams. Any fault in an inverter phase creates an unbalanced output voltage, which can lead to instability in the system. An additional auxiliary unit is connected in series to the three phase cascaded H-bridge circuit. With the help of this and the redundant switching states in SVM, the CHB inverter produces a balanced output with low harmonic distortion. This ensures high DC bus utilization under numerous fault conditions in three phases, which improves the system reliability. Simulation results are presented on three phase nine-level inverter with the automatic fault detection algorithm in the MATLAB/SIMULINK software tool, and experimental results are presented with DSP on five-level inverter to validate the practicality of the proposed SVM fault tolerance strategy on a CHB inverter with an auxiliary circuit.

Key words: Auxiliary circuit, Cascaded H-Bridge (CHB) inverter, Fault tolerance, Reliability, Space Vector Modulation (SVM)

#### I. INTRODUCTION

The utilization of Multilevel Inverters (MLIs) has been drastically increasing in medium voltage and high power industrial applications [1] in recent years. The basic role of multilevel converter is to obtain a high power by the series link of switching devices through lower DC voltage sources. The advantages of multilevel converters are their high DC bus utilization, superior efficiency, lower harmonic distortion and common mode voltage [2]. However, the number of semiconductor devices required is increased for higher voltage levels, which causes a reduction in system reliability and an increase in system cost. The reliability of the MLIs is very crucial in high power industrial applications. It necessitates continual operation even under faulty cases. For example, induction motor drives are mostly used for process control. If a fault occurs on the inverter side, a fuse or circuit breaker operates to isolate the power supply to protect the system. As a result, the induction motor stops working, which stops the production in industry. On the other hand, during a fault condition, an inverter may produce unbalanced output voltages, which may damage the motor if the motor runs continuously for a long time. Thus, fault tolerant techniques are very useful to improve the reliability of inverters under fault conditions.

The well known classical MLIs topologies are the flying capacitor [3], diode clamped [4] and cascaded H-bridge inverters [5], [6]. When compared to the other clamping structures, the cascaded H-bridge is suitable for industrial applications because the CHB has a modular structure and cell redundancy which improves the reliability of the inverter during fault conditions. In addition, the CHB inverter does not require any extra components like diodes or capacitors as in the other clamping structures. In addition, separate dc source inverter topologies are widely used for renewable energy applications [7], [8] like wind, fuel cell and photovoltaic systems. To control inverters, various modulation techniques have been reported. The Space Vector Pulse Width Modulation

Manuscript received Mar. 21, 2017; accepted Sep. 6, 2017

Recommended for publication by Associate Editor Younghoon Cho. <sup>†</sup>Corresponding Author: hemub09@gmail.com

Tel: +91-9766031642, Visvesvaraya Nat'l Inst. of Tech. (VNIT)

Dept. of Electrical Eng., Visvesvaraya Nat'l Inst. of Tech. (VNIT), India

<sup>\*\*</sup>Sagi RamaKrishnam Raju (SRKR) Engineering College, India



**International Journal of Engineering & Technology** 

Website: www.sciencepubco.com/index.php/IJET

Research paper



### Implementation of Fuzzy Logic Controller in Three Area Multi Source LFC System

**B. Sriram Vivek<sup>1</sup>**, K. Swetha<sup>1</sup>\*, D. Vijaya Kumar<sup>2</sup>

<sup>1</sup>Department of Electrical and Electronics Engineering, SRKR Engineering College, Bhimavaram, Andhra Pradesh, India-534204 <sup>2</sup>Department of Electrical and Electronics Engineering, AITAM College of Engineering, Tekkali, Andhra Pradesh, India – 532201 \*Corresponding author E-mail: swet07@gmail.com Tel#: +91-9959572149

### Abstract

The objective of this paper is to analyze power system with is interconnected with neighboring areas and having multisource power generation which is equipped with the fuzzy logic controller. Thermal, hydro and gas generating stations is used in each control area by considering real power environment. The proposed controller is tested with sudden step load disturbances. The dynamic response of LFC problem is studied by comparing with conventional controllers using MATLAB simulink software and found dynamic responses obtained satisfy the LFC requirement.

Keywords: Load Frequency Control (LFC); Area Control Error (ACE); Fuzzy Logic Controller;

### 1. Introduction

In general electrical power systems are interconnected to provide secure and reliable operation. For extensive level power systems with the restrictions in electrical power systems, LFC has great attraction due to large size and complexity with the increased connections [1 - 3]. Any deviation in frequency can directly impact power system reliability and system operation. LFC is an index of stability of power system; large deviations in power system cause an unstable condition in the power system.

LFC is one of the important control strategies for providing the reliable and controlled operation. Many researches are going on LFC to develop it for few years.LFC is used to regulate ACE error signal which accounts for errors in interconnected area frequency deviations or errors in the line power of inter connected areas [4].

Many researches use single area thermal or hydro and two area thermal –thermal ,hydro-thermal[5]and many thermal stations have equipped with non reheat type turbines ,less concentration is shown towards the reheat type turbines, in today's modern world multi source with multi area has growing attraction with sources like thermal ,hydro ,gas ,nuclear ,solar ,wind etc.

Over the years many controllers have been produced to tune the PID parameters such as Ziegler and Nichols[6 - 10] brought two methods to tune the parameter values in instance without knowing actual model of the system, then Genetic algorithm a natural search process inspired by genetics has got the popularity ,Bacterial Foraging optimization algorithm inspired by food finding process of Bacterium cells[6], Particle swam optimization a stochastic search technique over the other methods, fuzzy logic controller is trending due its simplicity, reliability and effectiveness and being used in every field of industrial automation.

In this paper three area system consists of thermal, hydro and gas generating sources is shown in the **Figure 1** [1] for designing a better control, each area consist of mainly three components governor, turbine and generator, all the linearised models of the components are presented for simulation in fig1 and its nomenclature is given in appendix [11–14]. Here in the thermal unit reheat turbine is presented for simulation.

### 2. Frequency Control Mechanism

In an interconnected system with multi area control, to maintain scheduled power interchange, the generation in each area has to be controlled. The change in load has an inverse relation with frequency, but the load changes continuously. Frequency control has three main control levels: primary control, load frequency control and economic dispatching control [12]. We utilize these control strategies to maintain system frequency output to a pre specified values.

Primary control is related to governor, it controls the steam valve That flows to a turbine, by controlling the steam valve we can control the generation rate. Governor reacts to the disturbances within the fraction of sec and stabilizes the frequency.

Load frequency control maintains the balance between the generation and demand and the system loses, if the load demand slightly increases then the operating point changes this leads to change in frequency. Load frequencies react to the disturbances and retrieve its frequency to normal position. Economic dispatch control refers to the temporary generation control at the lowest possible cost [4].To evaluate the area requirement the actual frequency and net inter change power flow are measured by the independent system operator (ISO).Area control error is a measure of balancing area's generating error.



Copyright © 2018 Authors. This is an open access article distributed under the <u>Creative Commons Attribution License</u>, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### **ARTICLE IN PRESS**

Ain Shams Engineering Journal xxx (xxxx) xxx

Contents lists available at ScienceDirect



### Ain Shams Engineering Journal

journal homepage: www.sciencedirect.com

### **Electrical Engineering**

## A DFT-ED based approach for detection and classification of faults in electric power transmission networks

Ch.D. Prasad<sup>a,\*</sup>, Paresh Kumar Nayak<sup>b</sup>

<sup>a</sup> Department of EEE, SRKR Engineering College, Andhra Pradesh, India

<sup>b</sup> Department of Electrical Engineering, Indian Institute of Technology (ISM), Dhanbad 826004, India

#### ARTICLE INFO

Article history: Received 17 June 2016 Revised 24 October 2017 Accepted 26 February 2018 Available online xxxx

Keywords: Discrete Fourier transform Euclidean distance High impedance fault Transmission line protection

#### ABSTRACT

This paper proposes a fast and reliable fault detection and classification scheme for electric power transmission networks using the estimated Euclidean distance between successive samples of actuating signal. In the proposed method, magnitudes of fundamental components of three-phase current phasors estimated through discrete Fourier transform are used as actuating signal. Performance of the proposed method is tested for numerous fault cases (symmetrical and unsymmetrical faults with varying fault inception angle, fault type, fault location and fault resistance) and non-fault cases (switching on/off of large loads and capacitor banks) by generating data through MATLAB/Simulink software on a two-bus test power system. Results clearly shows that using the proposed technique a fast and reliable fault detection and classification task can be accomplished.

© 2018 Production and hosting by Elsevier B.V. on behalf of Ain Shams University. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

#### 1. Introduction

Transmission lines are the vital parts of electrical power systems that provide the necessary continuity of service from generating plants to customers. They are stretched out on wide geographical regions. Therefore, transmission lines are exposed to maximum occurrences of faults among all the components in the power system. Protection of transmission lines from exposed faults is one of the most important functions in power system protection. Among various protection schemes digital distance relaying scheme is widely used for transmission line protection. Digital distance relaying scheme involves three major tasks; (i) fault detection, (ii) fault classification and (iii) fault location estimation. Fast detection of fault is the prerequisite in a digital distance relaying based transmission line protection scheme for quick separation of the faulted line from service and protecting it from the harmful effects of the fault. The obtained result from fault classification is utilized for fault location estimation. Accurate esti-

\* Corresponding author.

E-mail address: dpchinta@srkrec.edu.in (C.D. Prasad).

Peer review under responsibility of Ain Shams University.



mation of the location of the fault helps quick repairing and restoration of the faulty line. Significant research has been carried out in the last few decades for development of fast and accurate detection and classification of faults. Initiation of a fault causes significant change in the magnitude of various power system quantities such as current, voltage and power [1-3]. To detect such abnormal conditions, several techniques are proposed based on recognizing the variation of signals in time domain [1-10] and frequency domain [11-16]. A brief discussion on the available fault detection and classification methods are provided below.

Sample-to-sample and cycle-to-cycle comparison [1-3], absolute sum, moving sum [2,4], cumulative sum [1,5], and adaptive cumulative sum [6,7] of the measured time domain current and/ or voltage signals are some of the techniques proposed for transmission line fault detection [8–10]. Out of these methods, the first two methods are the straight forward techniques employed for transmission line fault detection. However, performances of these simple approaches are poor for some typical fault as well as non-fault events. Also, in all these techniques, to identify abnormal conditions, proper threshold setting is also a difficult task as the actuating signals vary instantaneously based on time. The detection and classification of faults using frequency domain approaches such as wavelet transform and S-transform are proposed in [11–15] and [16,17], respectively. Comparing to earlier statistical methods, time-frequency transformation methods discriminate disturbances more accurately. But these techniques require data

#### https://doi.org/10.1016/j.asej.2018.02.004

2090-4479/© 2018 Production and hosting by Elsevier B.V. on behalf of Ain Shams University. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Page 105 Please cite this article as: C. D. Prasad and P. K. Nayak, A DFT-ED based approach for detection and classification of faults in electric power transmission networks, Ain Shams Engineering Journal, https://doi.org/10.1016/j.asej.2018.02.004

### Frequency control of an isolated power system considering mutual effects of AGC in presence of energy storage units

### Mallareddy Mounica\* and Chinta Durga Prasad

Department of Electrical and Electronics Engineering, SRKR Engineering College, Bhimavaram, India Email: mounicam7@gmail.com Email: Chdpindia@gmail.com \*Corresponding author

### Ravi Kumar Jatoth

Department of Electronics and Communication Engineering, NIT Warangal, India Email: ravikumar@nitw.ac.in

**Abstract:** Automatic generation control (AGC) of an isolated power system is investigated in this paper. Performance analysis is carried out by considering the mutual coupling effect between load frequency control (LFC) and automatic voltage regulator (AVR) control loops by adding one fixed and one variable energy storage systems (ESS). The insertion of storage devices reduces the frequency oscillations for various load changes and also reduces the mutual effect of LFC and AVR. Simultaneous coordinated tuning of secondary controller and variable storage unit with particle swarm optimisation (PSO) and improved particle swarm optimisation (IPSO) is carried out to provide control strategy for the system. The system is simulated both in presence and absence of secondary controller in which IPSO gives better performance results than PSO. The simulation is carried out in MATLAB/Simulink software.

**Keywords:** load frequency control; LFC; automatic voltage regulation; mutual coupling effects; energy storage systems; ESS; power compensation; particle swarm optimisation; PSO; improved PSO; settling time.

**Reference** to this paper should be made as follows: Mounica, M., Prasad, C.D. and Jatoth, R.K. (2019) 'Frequency control of an isolated power system considering mutual effects of AGC in presence of energy storage units', *Int. J. Systems, Control and Communications*, Vol. 10, No. 2, pp.126–146.

**Biographical notes:** Mallareddy Mounica received her Bachelor of Technology degree from the Sri Padmavati Mahila Viswa Vidyalayam, Tirupati in 2014. She received her Master of Technology degree from the SRKR Engineering College, Bhimavarm in 2017. Her areas of interest are load frequency control, energy storage units, optimisation techniques, virtual inertia, and electrical drives.

Copyright © 2019 Inderscience Enterprises Ltd.

### Medical Image Classification Using Hierarchical Clustering and Generalized Gamma Distribution for Effective Identification of Diseases in Brain

### K.Srinivas<sup>1</sup>\*, P.V.G.D Prasad Reddy<sup>2</sup>, GPS Varma<sup>3</sup>

<sup>1</sup>Research Scholar, Department of CS&SE, Andhra University, Visakhapatnam, Andhra Pradesh, India. <sup>2</sup>Prof & HOD, Department of CS&SE, Andhra University, Visakhapatnam, Andhra Pradesh, India. <sup>3</sup>Principal, SRKR Engineering College, Bhimavaram, Andhra Pradesh, India.

### Abstract

Medical imaging is a specialized stem of image processing, which deals largely with the study of medical related data and the analysis of this data for identifying the deformities within the data. Many segmentation and classification techniques are available in the literature. However, there are no concrete algorithms and methods are available to identify the diseases related for effective classification of brain related data. Most of the brain related is highlighted of late leading towards mortality. Therefore for effective recognition and interpretation of the brain related data, a new model is proposed in this article based on Generalized Gama Distribution. The performance evaluation carried out by using metrics like Average Difference, Maximum Distance, Image Fidelity; Mean squared Error and Signal to Noise Ratio showcase that the developed model discloses an accuracy rate of above 90 percent in most of the cases

**Keywords**: Medical image examination, Acoustic Neuroma, Parkinson's diseases, Performance evaluation metrics, AD, IF, MSE, PSNR

### **INTRODUCTION**

Image Processing attributes towards the techniques and models used for the development of image analysis. One of the most popularized stems of image processing includes medical image processing. Here the main objective of medical image processing is to consider a input MRI image process it, enhance it and later cluster it to derive meaningful associated patterns from these clusters. Many medical imaging techniques are coined in the literature and most of them are either structured or unstructured [1], [2], [3], [4]. To analyze the medical data one need to convert this unstructured data into structured such that the interpretation and analysis are feasible. To convert this unstructured data, many clustering algorithms are highlighted in the literature, viz., k-Means algorithm, Hierarchical clustering (HC), Fuzzy-C Means Clustering, Rough set based clustering, Fuzzy Rough Sets and Vague set based approaches [5], [6], [7], [8], [9], [10]. Among these approaches most of the works are reported on k-Means clustering with the very assumption that it gives appropriate clustering results when compared to the other clustering algorithms[15]. With this approach most of the literature is driven. However, the k-Means suffers with disadvantage that it cannot identify exactly the data at the exterior points and hence it leads to out layers also

another disadvantages with k-means algorithms is that if the value of k is not interpreted exactly, it results into either over segmentation or under segmentation and in some particular cases it results into spherical clusters accounting to the number of clusters to ONE. However when dealing with applications of medical data all the data points become vital in identifying the disease and hence no pixel or data point should be left alone. With this consideration, in this article we exhibit a model based on hierarchical clustering such that the above said disadvantages can be overruled. However, Hierarchical Clustering formulates a dendrogram which enables us to underline the number of hidden clusters. Using this approach, more beneficial results are subjected in case of medical analysis.

The challenges associated with the medical data, in particular the brain related data is that the algorithms used should able to penetrate into the tissues of the brain viz., white matter, grey matter and cerebra spinal fluid and in most of the cases the pixels exposed to the diseases may be covered under these tissues and hence effective classification is needed for better analysis of the data. The medical data consists of data extending towards both the boundaries, thereby formulating thin lines generally called as the tails. These tails carry some information and hence to model or extract the information in the tails elongated towards either ends one need to consider statistical models that can interpret the inherent details within the data of the tails. To extract this data, among the statistical models Generalized Gama Distributions (GGD) is mostly preferred. The main advantage behind the choice of GGD is that it formulated various shapes of models, each shape resembling the pattern of a particular distribution and it includes several other distributions such as Gama, Laplace, Raleigh, Gaussian, Erlang Distributions as particular cases. Therefore in this article a methodology for identification and classification of brain related data is presented using the concepts of HC and GGD. The rest of the article is articulated as follows section-2 of the paper deals with the GGM and its Probability Density Function, this section also highlights the updated parameters of the proposed model, Section-3 highlights the clustering methodology based on Hierarchical clustering algorithm, the Dataset considered is presented in section 4, the section 5 of the paper highlights the experimentation carried out and in the section 6, the performance of the model is carried out using evaluation metrics like Average Difference, Maximum distance, Image Fedility, Mean Squared Error and Signal to

# SCIENTIFIC REPORTS

Received: 27 July 2018 Accepted: 14 January 2019 Published online: 05 February 2019

### **OPEN** Diff isomiRs: Large-scale detection of differential isomiRs for understanding non-coding regulated stress omics in plants

Kun Yang<sup>1</sup>, Xiaopeng Wen<sup>1</sup>, Suresh Mudunuri<sup>2</sup>, G. P. Saradhi Varma<sup>2</sup> & Gaurav Sablok<sup>3,4</sup>

Plants have an amazing ability to cope with wide variety of stresses by regulating the expression of genes and thus by altering the physiological status. In the past few years, canonical microRNA variants (isomiRs) have been shown to play pivotal roles by acting as regulators of the transcriptional machinery. In the present research, we present Diff isomiRs, a web-based exploratory repository of differential isomiRs across 16 sequenced plant species representing a total of 433 datasets across 21 different stresses and 158 experimental states. Diff isomiRs provides the high-throughput detection of differential isomiRs using mapping-based and model-based differential analysis revealing a total of 16,157 and 2,028 differential isomiRs, respectively. Easy-to-use and web-based exploration of differential isomiRs provides several features such as browsing of the differential isomiRs according to stress or species, as well as association of the differential isomiRs to targets and plant endogenous target mimics (PeTMs). Diff isomiRs also provides the relationship between the canonical miRNAs, isomiRs and the miRNA-target interactions. This is the first web-based large-scale repository for browsing differential isomiRs and will facilitate better understanding of the regulatory role of the isomiRs with respect to the canonical microRNAs. Diff isomiRs can be accessed at: www.mcr.org.in/ diffisomirs.

Functional genomics of abiotic stress tolerance in plants is at the forefront of the 21st century. To improve plant longevity and sustainability, several approaches such as high-throughput expression profiling, next generation sequencing and emerging gene targeting are used in combination with each other and playing a key role in developing solutions<sup>1-3</sup>. In line with these approaches, multiple efforts have been leveraged to understand the transcriptional and post-transcriptional machinery, which includes the high-throughput profiling of the gene arrays and understanding the regulatory elements. Among the regulatory elements, non-coding RNAs, e.g. miRNAs<sup>4,5</sup>, artificial microRNAs (amiRNAs)<sup>6</sup>, circular RNAs (circRNAs)<sup>7,8</sup>, and long non-coding RNAs (lncRNAs)<sup>9</sup> have been shown to be among the dominant class of non-coding RNAs in shaping the post-transcriptional events in plants. Plant microRNAs play a key role in defining the post-transcriptional regulation by altering the transcriptional regulation either through cleavage or translational suppression<sup>10</sup>, microRNA biogenesis has been long studied through the development of HUA1 ENHANCER1 (HEN1) loss-of-function mutants, which is defective in methylating the microRNA duplex prior to exporting them to cytoplasm by Exportin5<sup>11</sup>. Biogenesis pathways of endogenous microRNAs are well established in plants elucidating the conversion from the pri-miRNAs to pre-miRNAs by Dicer-like (DCL1), followed by subsequent methylation by HEN1 methyltransferase and recruited by the ARGONAUTE 1 (AGO1) to form the RNA-induced silencing complex (RISC), which later causes the post-transcriptional suppression. miRNA biogenesis can be regulated by several factors such as whether the

<sup>1</sup>Key Laboratory of Plant Resources Conservation and Germplasm Innovation in Mountainous Region (Guizhou University), Ministry of Education, Institute of Agro-bioengineering/College of Life Sciences, Guizhou University, Guiyang, 550025, Guizhou Province, P. R. China. <sup>2</sup>Centre for Bioinformatics Research, SRKR Engineering College, Chinna Amiram, Bhimavaram, West Godavari District, Andhra Pradesh, 534204, India. <sup>3</sup>Finnish Museum of Natural History, Helsinki, Finland. <sup>4</sup>Organismal and Evolutionary Biology (OEB) Research Programme, Department of Biological and Environmental Sciences, University of Helsinki, Helsinki, Finland. Kun Yang and Gaurav Sablok contributed equally. Correspondence and requests for materials should be addressed to X.W. (email: xpwensc@ hotmail.com) or G.S. (email: sablokg@gmail.com)

Page 108




# Plant IsomiR Atlas: Large Scale Detection, Profiling, and Target Repertoire of IsomiRs in Plants

Kun Yang<sup>1†</sup>, Xiaopeng Wen<sup>1\*</sup>, Suresh B. Mudunuri<sup>2</sup> and Gaurav Sablok<sup>3,4\*†</sup>

<sup>1</sup> Key Laboratory of Plant Resources Conservation and Germplasm Innovation in Mountainous Region (Guizhou University), Ministry of Education, Institute of Agro-Bioengineering, College of Life Sciences, Guizhou University, Guiyang, China, <sup>2</sup> Centre for Bioinformatics Research, SRKR Engineering College, Bhimavaram, India, <sup>3</sup> Finnish Museum of Natural History, University of Helsinki, Helsinki, Finland, <sup>4</sup> Organismal and Evolutionary Biology (OEB) Research Programme, Department of Biological and Environmental Sciences, University of Helsinki, Helsinki, Finland

microRNAs (miRNAs) play an important role as key regulators controlling the post-transcriptional events in plants across development, abiotic and biotic stress, tissue polarity and also in defining the evolutionary basis of the origin of the post-transcriptional machinery. Identifying patterns of regulated and co-regulated small RNAs, in particular miRNAs and their sequence variants with the availability of next generation sequencing approaches has widely demonstrated the role of miRNAs and their temporal regulation in maintaining plant development and their response to stress conditions. Although the role of canonical miRNAs has been widely explored and functional diversity is revealed, those works for isomiRs are still limited and urgent to be carried out across plants. This relative lack of information with respect to isomiRs might be attributed to the non-availability of large-scale detection of isomiRs across wide plant species. In the present research, we addressed this by developing Plant isomiR Atlas, which provides large-scale detection of isomiRs across 23 plant species utilizing 677 smallRNAs datasets and reveals a total of 98,374 templated and non-templated isomiRs from 6,167 precursors. Plant isomiR Atlas provides several visualization features such as species specific isomiRs, isomiRs and canonical miRNAs overlap, terminal modification classifications, target identification using psRNATarget and TargetFinder and also canonical miRNAs:target interactions. Plant isomiR Atlas will play a key role in understanding the regulatory nature of miRNAome and will accelerate to understand the functional role of isomiRs. Plant isomiR Atlas is available at www.mcr.org.in/isomir.

### **ONE SENTENCE SUMMARY**

Plant isomiR Atlas will play a key role in understanding the regulatory nature of miRNAome and will accelerate the understanding and diversity of functional targets of plants isomiRs.

Keywords: isomiRs, microRNAs, plants, post-transcriptional machinery, functional targets

# INTRODUCTION

Mechanistic understanding of plant RNA biology and identifying classes and patterns of smallRNAs, a class of non-coding RNAs has evolved particularly after the advent of the next-generation sequencing. Non-coding RNAs such as microRNAs, long non-coding RNAs (lncRNAs), miRtrons (miRNAs located in introns), artificial miRNAs, siRNAs, phasiRNAs, and trans-acting

### OPEN ACCESS

#### Edited by:

Rosalba Giugno, Università degli Studi di Verona, Italy

#### Reviewed by:

Firoz Ahmed, Jeddah University, Saudi Arabia Quan Zou, University of Electronic Science and Technology of China, China

#### \*Correspondence:

Xiaopeng Wen xpwensc@hotmail.com Gaurav Sablok sablokg@gmail.com

<sup>†</sup>These authors have contributed equally to this work

## Specialty section:

This article was submitted to Bioinformatics and Computational Biology, a section of the journal Frontiers in Plant Science

Received: 09 March 2018 Accepted: 05 December 2018 Published: 22 January 2019

#### Citation:

Yang K, Wen X, Mudunuri SB and Sablok G (2019) Plant IsomiR Atlas: Large Scale Detection, Profiling, and Target Repertoire of IsomiRs in Plants. Front. Plant Sci. 9:1881. doi: 10.3389/fpls.2018.018.01



The Candidate is registered under the guidance of

Name of the Guide	Name of the Co-Guide
Dr. V. MAHALAKSHMI	DR.N.GOPALAKRISHNAMURTHY
COMPUTER SCIENCE & ENGINEERING	CHINAMIRAM

He / She has to produce all the required original certificates at the time of admission.

1,40th, H.Sc., U.G., P.G., and M.Phil Mark Lists

2.Degree Certificate - P.G. & M Phil Programmes

**3. Transfer or Migration Certificate** 

4.Research VISA & Passport, If Foreign National

5.Recent Passport Size Photographs (2 Numbers)

He / She has to report to the office of the Director, Centre for Academic Research (CARE) on

# 0 12 2018 at 10.00 A.M.

His / Her admission will be confirmed, after verification of original certificates and on

payment of Tuition Fee of Rs.78410.00. He / She should submit joining report along with copy

of remittance challan through proper channel.

Note: 1. He/ She should publish two research articles either in SCOPUS or WEB OF SCIENCE indexed journals before submission of synopsis.

2 Other conditions viz., Submission of title, Course Work Examinations, Extension of time, Change of guide/status, Submission of thesis, etc., remain as prescribed in the prospectus.

#### To

Mr./Ms. BODDU L V SIVA RAMA KRISHNA

Copy To

The Head, Department of Computer Science & Engineering

The Guide : Dr. V. MAHALAKSHMI, ASSISTANT PROFESSOR, COMPUTER SCIENCE & ENGINEERING

The Co - Guide : DR.N.GOPALAKRISHNAMURTHY, PROF & HOD, DEPT. OF INFR. TECH, SRKR ENGG COLLEGE CHINAMIRAM

Note : Date of Payment of Fee will be considered as Date of Joining

# Scanned with CamScanner



Mr.7Ms PAVAN KUMAR VARMA K D V is informed that he/she has been provisionally selected for admission to Ph.D. Degree Programme in <u>Computer Science & Engineering</u> under External registration, subject to fulfil the eligibility conditions

The Candidate is registered under the guidance of

Name of the Guide	Name of the Co-Guide	
Dr. V. RATHIKARANI	DR.N. GOPALAKRISHMURTHY	
ASSISTANT PROFESSOR	PROFESSOR DEPT. OF TECH., SRKR ENGG COLLEGE	
COMPUTER SCIENCE & ENGINEERING	AP STATE	

He / She has to produce all the required original certificates at the time of admission.

1.10th, H.Sc., U.G., P.G., and M.Phil Mark Lists

2.Degree Certificate - P.G. & M.Phil Programmes

3. Transfer or Migration Certificate

4.Research VISA & Passport, if Foreign National

5.Recent Passport Size Photographs (2 Numbers)

He / She has to report to the office of the Director, Centre for Academic Research (CARE) on

10 12 2018 at 10.00 A.M.

His / Her admission will be confirmed, after verification of original certificates and on

payment of Tuition Fee of Rs.78410.00. He / She should submit joining report along with copy

of remittance challan through proper channel.

- Note: 1. He/ She should publish two research articles either in SCOPUS or WEB OF SCIENCE indexed journals before submission of synopsis.
  - 2. Other conditions viz., Submission of title, Course Work Examinations, Extension of time, Change of guide/status Submission of thesis, etc., remain as prescribed in the prospectus.

To

Mr./Ms. PAVAN KUMAR VARMA K D V

Сору То

The Head, Department of Computer Science & Engineering

The Guide : Dr. V. RATHIKARANI, ASSISTANT PROFESSOR, COMPUTER SCIENCE & ENGINEERING

The Co - Guide : DR.N. GOPALAKRISHMURTHY, HOD & PROF, DEPT. OF TECH., SRKR ENGG COLLEGE AP STATE

Note : Date of Payment of Fee will be considered as Date of Joining

anned

CamScanne

-alat a Bu	(A STATE UNIVE	NAL ALLACAR 608 002
	ANNAMALAINAGAR - 608 002	
Column NIOTANTH	Pn.L	
py	<u>A</u>	DMISSION MEMO
	an Astrony Astrony	(2018-2019)
pp. No. : R21444	and the second	For Office Use - Roll Number
rogramme Code :	3909	
Mr./Ms.	ATYANARAYANA RAJU K	is informed that he/she has been provisionally
elected for admissi	on to Ph.D. Degree Prog	ramme InInformation Technology
ander External	registration, subject	to fulfil the eligibility conditions
The Candidate is	registered under the gui	dance of
D- K SELVAKIMAL		
ASSOCIATE PROFE	SSOR	HOD, CENTRE FOR BIO INFORMATICS RESEARCH
	NOLOGI	SRKR ENGG COLLEGE, BHIMAVARAM, AP STATE
He / She has t 1.10th H 2.Degree 3.Transfer	o produce all the requise Sc., U.G., P.G., and M.P. Certificate - P.G. & M.Ph or Migration Certificate	SRKR ENGG COLLEGE, BHIMAVARAM, AP STATE
He / She has t 1.10th H 2.Degree 3.Transfer 4.Researc 5.Recent I He / She has t	o produce all the requise Sc. U.G. P.G., and M.P. Certificate - P.G. & M.P. or Migration Certificate h VISA & Paseport, if Fo Passport Size Photograp o report to the office o	SRKR ENGG COLLEGE, BHIMAVARAM, AP STATE alred original certificates at the time of admission. bil Mark Lists all Programmes oreign National ohs (2 Numbers) of the Director, Centre for Academic Research (CARE) on
He / She has t 1.10th H 2.Degree 3.Transfer 4.Researc 5.Recent f He / She has t 06 12 2018	to produce all the requise So. U.G.P.G., and M.P. Certificate - P.G. & M.P. or Migration Certificate h VISA & Passport, if Fo Passport Size Photograp o report to the office o at 10.00 A.M.	SRKR ENGG COLLEGE, BHIMAVARAM, AP STATE alfred original certificates at the time of admission. The Mark Lists all Programmes oreign National ohs (2 Numbers) of the Director, Centre for Academic Research (CARE) on
He / She has the formula of the formula of the formula of the has the has the formula of the fo	o produce all the requise. So Droduce all the requise. So U.G.P.G., and M.P.P. Certificate - P.G. & M.P.H or Migration Certificate h VISA & Passport, if Fo Passport Size Photograp o report to the office of at 10.00 A.M. mission will be of	SRKR ENGG COLLEGE, BHIMAVARAM, AP STATE alfred original certificates at the time of admission. The Mark Lists all Programmes oreign National ohs (2 Numbers) of the Director, Centre for Academic Research (CARE) on confirmed, after verification of original certificates and on D. He / She should submit joining report along with copy
He / She has t 1.10th H 2.Degree 3.Transfer 4.Researc 5.Recent f He / She has t 6 12 2018 His / Her ad ayment of Tulk	to produce all the requise. So produce all the requise. So U.G.P.G., and M.P.P. Certificate - P.G. & M.P.H. or Migration Certificate h VISA & Passport, if For Passport Size Photograp o report to the office of at 10.00 A.M. mission will be of tion Fee of Rs.78410.00 lian through proper of	SRKR ENGG COLLEGE, BHIMAVARAM, AP STATE alred original certificates at the time of admission. Init Mark Lists all Programmes oreign National ohs (2 Numbers) of the Director, Centre for Academic Research (CARE) on onfirmed, after verification of original certificates and on D. He / She should submit joining report along with copy mannel.
He / She has t 1.10th H 2.Degree 3.Transfer 4.Researc 5.Recent I He / She has t 06/12/2018 His / Her ad ayment of Tult f remittance cha <u>Note:</u> 1. He/ She submissi	to produce all the requise So produce all the requise So U.G.P.G., and M.P. Certificate - P.G. & M.P. or Migration Certificate th VISA & Passport, if Fo Passport Size Photograp o report to the office of at 10.00 A.M. mission will be of tion Fee of Rs.78410.00 lian through proper of should publish two researc on of synopsis.	SRKR ENGG COLLEGE, BHIMAVARAM, AP STATE
He / She has t 1.10th H 2.Degree 3.Transfer 4.Researc 5.Recent I He / She has t 06/12/2018 His / Her ad ayment of Tulk f remittance cha Note: 1. He/ She submissi 2. Other co Submissi	to produce all the requise. U.G.P.G., and M.P.P. Certificate - P.G. & M.P.H. or Migration Certificate th VISA & Paseport, if For Passport Size Photograp o report to the office of at 10.00 A.M. mission will be cu ion Fee of Rs.78410.00 lien through proper of should publish two researc on of synopsis. nditions viz., Submission of on of thesis, etc., remain a	SKKR ENGG COLLEGE, BHIMAVARAM, AP STATE  Infred original certificates at the time of admission.  Infl Mark Lists Infl Mark Lists Infl Mark Lists Informes  Informes  Informed, after verification of original certificates and on Informed, after verification of the prospective tertificates after tertificates attracted in the prospectus. Informed Inf
He / She has t 1.10th H 2.Degree 3.Transfer 4.Researc 5.Recent I He / She has t 612 2018 His / Her ad ayment of Tull f remittance cha <u>Note.</u> 1.He/She submissi 2. Other co Submissi	o produce all the requise, U.G.P.G., and M.P.P. Certificate - P.G. & M.P.H. or Migration Certificate h VISA & Paseport, if For Passport Size Photograp o report to the office of at 10.00 A.M. mission will be or tion Fee of Rs.78410.00 lien through proper of should publish two researc on of synopsis. nditions viz., Submission of thesis, etc., remain a	SKKR ENGG COLLEGE, BHIMAVARAM, AP STATE  Infred original certificates at the time of admission.  Infl Mark Lista Infl Programmes  Preign National Ons (2 Numbers)  of the Director, Centre for Academic Research (CARE) on  onfirmed, after verification of original certificates and on  . He / She should submit joining report along with copy mannel.  In articles either in SCOPUS or WEB OF SCIENCE indexed journals before  f title, Course Work Examinations, Extension of time, Change of guide/status, is prescribed in the prospectus.
He / She has t 1.10th H 2.Degree 3.Transfer 4.Researc 5.Recent I He / She has t 61222018 His / Her ad ayment of Tull f remittance cha Note: 1.He/ She submissi 2. Other co Submissi	to produce all the requise. U.G.P.G., and M.P.P. Certificate - P.G. & M.P.H. or Migration Certificate h VISA & Passport, if For Passport Size Photograp o report to the office of at 10.00 A.M. mission will be of the for Fee of Rs.78410.00 lian through proper of should publish two researc on of synopsis. Inditions viz., Submission of on of thesis, etc., remain a rANA RAJU K	SKKR ENGG COLLEGE, BHIMAVARAM, AP STATE ulred original certificates at the time of admission. hi Mark Lista all Programmes oreign National bhs (2 Numbers) of the Director, Centre for Academic Research (CARE) on onfirmed, after verification of original certificates and on b. He / She should submit joining report along with copy hennel. h atticles alther in SCOPUS or WEB OF SCIENCE indexed journals before f title, Course Work Examinations, Extension of time, Change of guide/status, is prescribed in the prospectus. Build Status, Scopeus of time, Change of guide/status, is prescribed in the prospectus.
He / She has t 1.10th H 2.Degree 3.Transfer 4.Researc 5.Recent f He / She has t 06/12/2008 His / Her ad ayment of Tull f remittance cha Note: 1.He/ She submissi 2. Other co Submissi 0 Mr./Ms. SATYANARA' Opy To : The Head, Deg	to produce all the requise. U.G.P.G., and M.P.P. Certificate - P.G. & M.P.H. or Migration Certificate h VISA & Passport, if For Passport Size Photograp o report to the office of at 10.00 A.M. mission will be of ion Fee of Rs.78410.00 lian through proper of should publish two researc on of synopsis. Inditions viz., Submission of ion of thesis, etc., remain a rANA RAJU K	SKR ENGG COLLEGE, BHIMAVARAM, AP STATE  Introd original certificates at the time of admission.  Inti Mark Lists Inti Programmes  Preign National Obs (2 Numbers)  of the Director, Centre for Academic Research (CARE) on  onfirmed, after verification of original certificates and on  . He / She should submit joining report along with copy hannel.  th atticles either in SCOPUS or WEB OF SCIENCE indexed journals before  filtle, Course Work Examinations, Extension of time. Change of guide/status, is prescribed in the prospectus.  ALE PROFESSOR INFORMATION TECHNOLOGY
He / She has t 1.10th H 2.Degree 3.Transfer 4.Researc 5.Recent I He / She has t 06/12/2018 His / Her ad ayment of Tult f remittance cha Note: 1. He/ She submissi 2. Other co Submissi 0 Mr./Ms. SATYANARA' opy To : The Head, Dej The Guide : D	to produce all the requise So produce all the requise So U.G.P.G., and M.P. Certificate - P.G. & M.P. or Migration Certificate h VISA & Paseport, if Fo Passport Size Photograp o report to the office of at 10.00 A.M. mission will be of at 10.00 A.M. mission will be of don Fee of Rs.78410.00 lian through proper of should publish two researc on of synopsis. Inditions viz. Submission of ion of thesis, etc., remain a rANA RAJU K partment of Information To r.K. SELVAKUMAR, ASSOCI	SRR ENGG COLLEGE, BHIMAVARAM, AP STATE  Intred original certificates at the time of admission.  Intri Mark Lista Inter Programmes  Inter Programmes  Inter Director, Centre for Academic Research (CARE) on  Inter Director, Centre for Academic Research (CARE) on  Inter She should submit joining report along with copy Internet.  Inter Course Work Examinations, Extension of time, Change of guide/status, is prescribed in the prospectus.  Inter Professor, INFORMATION TECHNOLOGY  Inter Profe
He / She has t 1 10th H 2.Degree 3.Transfer 4.Researc 5.Recent f He / She has t 06 12 2018 His / Her ad ayment of Tulf f remittance cha Note: 1. He/ She submissi 2. Other co Submissi 2. Other co Submissi 3. Other co Submissi 4. Researc 5. Recent f He / She has t 3. Tulf 4. Researc 5. Recent f 4. Researc 5. Recent f 5. Recent f 5	to produce all the requise. U.G.P.G., and M.P.P. Certificate - P.G. & M.P.H. or Migration Certificate h VISA & Passport, if For Passport Size Photograp o report to the office of at 10.00 A.M. mission will be of ion Fee of Rs.78410.00 lian through proper of should publish two researc on of synopsis. Inditions viz., Submission of ion of thesis, etc., remain a YANA RAJU K Dartment of Information Te r. K. SELVAKUMAR, ASSOCI SRKR ENGG COLLEGE Payment of Fee Will be cou	SRR ENGG COLLEGE, BHIMAVARAM, AP STATE  Interd original certificates at the time of admission.  Interd original certification of original certificates and on  Interd original certificates at on  Interd original certificates and on  Interd original certificates  Interd original

Page 112

# Scanned by CamScanner

Annamala (A STATE UNIVERSITY ACCE ANNAMALAI Ph.D. Degi ADMISS (20)	i Entiversity edited with 'A' grade BY NAAC) NAGAR - 608 002 ee Programme ION MEMO 18-2019)
App. No. : R21507	For Office Use - Roll Number
Date : 15-11-2018	18
Programme Code : 3909         Mr./Ms.       CHANDRA SEKHAR K         selected for admission to Ph.D. Degree Programme in under External registration, subject to fulfil the	is informed that he/she has been provisionally Information Technology e eligibility conditions

The Candidate is registered under the guidance of

Name of the Guide	Name of the Co-Guide
Dr. K. SANTHOSH KUMAR	DR.SURESH BABU MUDUNURI
ASSISTANT PROFESSOR	HEAD, CENTRE FOR BIOINFORMATICS RESEARCH
INFORMATION TECHNOLOGY	SRKR ENGG. COLLEGE, BHIMAVARAM, AP STATE

He / She has to produce all the required original certificates at the time of admission.

1.10th, H.Sc., U.G., P.G., and M.Phil Mark Lists

2.Degree Certificate - P.G. & M.Phil Programmes

**3. Transfer or Migration Certificate** 

4.Research VISA & Passport, If Foreign National

5.Recent Passport Size Photographs (2 Numbers)

He / She has to report to the office of the Director, Centre for Academic Research (CARE) on

His / Her admission will be confirmed, after verification of original certificates and on

payment of Tuition Fee of Rs.78410.00. He / She should submit joining report along with copy

## of remittance challan through proper channel.

- Note: 1. He/ She should publish two research articles either in SCOPUS or WEB OF SCIENCE indexed journals before submission of synopsis.
  - 2. Other conditions viz., Submission of title, Course Work Examinations, Extension of time, Change of guide/status, Submission of thesis, etc., remain as prescribed in the prospectus.

REGISTRA

To

### Mr./Ms. CHANDRA SEKHAR K

Copy To : The Head, Department of Information Technology

The Guide : Dr. K. SANTHOSH KUMAR, ASSISTANT PROFESSOR, INFORMATION TECHNOLOGY

The Co - Guide : DR.SURESH BABU MUDUNURI, HEAD, CENTRE FOR BIOINFORMATICS RESEARCH SRKR ENGG, COLLEGE, BHIMAVARAM, AP STATE

Note : Date of Payment of Fee will be considered as Date of Joining