



## Sri Ramakrishna Institute of Technology

(An Autonomous Institution)

(Accredited by NAAC with “A” Grade)

Pachapalayam, Perur Chettipalayam, Coimbatore – 641 010

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### Faculty Profile

**Full name with Qualification, Designation and Department:**

**Dr. Hema CR B.E., M.S., Ph.D.,**  
Professor and Head  
Electrical and Electronics Engineering



<b>Date of birth</b>	:	18/09/1966	<b>Gender</b>	:	Female
<b>Nationality</b>	:	Indian	<b>Marital status</b>	:	married
<b>Address for correspondence</b>	:	5/5, M.G.R.Nagar, Ceylon Colony, Podanur, Coimbatore 641 023	<b>Permanent address</b>	:	5/5, M.G.R.Nagar, Ceylon Colony, Podanur, Coimbatore 641 023
<b>Mobile no</b>	:	<a href="tel:8925102799">8925102799</a>	<b>e-mail (official)</b>	:	Hod.eee@srit.org
<b>Landline</b>	:		<b>e-mail (personal)</b>	:	<a href="mailto:hemacr@yahoo.com">hemacr@yahoo.com</a>
<b>Date of joining</b>	:	01/07/2021	<b>Post of joining</b>	:	Professor and Head
<b>No of promotions since D.O.J</b>	:	01/07/2021	<b>Present post</b>	:	Professor and Head
<b>Present pay scale</b>	:	85,844.00	<b>Gross pay</b>	:	94,644.00
<b>Employer ID</b>	:	TE414	<b>Bank account No. (Salary credited)</b>	:	500101012533846
<b>P.F. No</b>	:	TN/CBE/56764/10917	<b>Group Insurance No</b>	:	AG00059675000102
<b>PAN Number</b>	:	AGFPH3464G	<b>Aadhar Number</b>	:	2844 8552 6418
<b>AICTE ID</b>	:	1-9511192051	<b>AICTE Institution ID</b>	:	1-7841521

### Educational Qualification

Degree	Specialization	Year of Passing	Name of the College	Name of the University	Class Obtained
UG	B.E.EEE	1989	Government College of Engineering	Madurai Kamaraj University	First Class
PG	MS. EEE	2005		University Malaysia Sabah, Malaysia	First Class
Ph.D	Mechatronic Engineering	2010		University Malaysia Perlis, Malaysia	
Others					

Registration for Ph.D. with area of interest:

Year of Ph.D. Registration:

Year of Ph.D. Completed:

Thesis Title: "Brain Machine Interface Controlled Robot Chair"

Supervisor Recognition Number:

Ph.D. Scholar Details

S.No.	Name of the scholar	Registration details	College	Status
1.	S. Ramkumar		Karpagam University	Completion
2.	K.P. Sridhar		Karpagam University	Completion
3.	A. Elakkiya		Karpagam University	Completion

### Academic Experience

Name of the College	Designation	Joining Date	Relieving Date	Experience		
				Years	Months	Days
Kumaraguru College of Technology	Asst. Lecturer	Jul 1989	Jun 1990		11	

Government College of Technology	Lecturer	Jul1990	Mar 1991		08	
University Malaysia Perlis	Lecturer	Dec 2005	May 2010	05	05	
Akshaya College of Engineering and Technology	Principal	Jun 2010	May 2011		11	
Karpagam Academy of Higher Education (Deemed University)	Dean Engineering Research	Jul 2011	Dec 2012	01	05	
Karpagam Academy of Higher Education (Deemed University)	Dean Engineering Research	Dec 2012	Mar 2016	04	03	
Rathinam Technical Campus, Coimbatore	Principal	Jun 2016	Apr 2017		10	
Sri Ramakrishna Institute of technology	Professor and Head	01/07/2021	Till Date			
<b>Total</b>				<b>10</b>	<b>34</b>	

### Industrial Experience

Name of the Organisation	Designation	Nature of Work	Joining Date	Relieving Date	Experience		
					Years	Months	Days
Tamil Nadu Electricity Board	Assistant Electrical Engineer	Operation and Maintenance	Mar 1991	May 2000	09	02	
Tamil Nadu Electricity Board	Manager Information Systems	Operation and Maintenance	May 2000	Jun 2003	3	1	
<b>Total</b>					<b>12</b>	<b>03</b>	

### Courses Handled

Academic Year	Semester	Course Code	Course Name	Type of Course (T / L)	Pass Percentage
2022-23	6 <sup>th</sup>	20EEP55	Introduction to Image Processing	T	85
2022-23	8 <sup>th</sup>	20AC002	Constitution of India	T	95
2022-23	3 <sup>rd</sup>	20MEE04	Introduction to Robotics	T	100
2022-23	5 <sup>th</sup>	20MEE04	Introduction to Robotics	T	100
2021-22	5 <sup>th</sup>	UEEE210	Sensors for Robotics	T	100

### Projects Guided

Academic Year	Semester	Project Title	UG / PG
2023-24	7 <sup>th</sup>	Smart vision for reversing vehicle	
2022-23	7&8	A Human Machine Interface for Visually Impaired People	UG
2021-22	7&8	House Keeping Robo Obstacle Avoidance Robo	UG
		Smart Fishing Boat	UG
		Collar Cleaning Machine	UG
		Mehndi Machine	UG
		Paper Bag Making Machine	UG
		Bongos	UG
		Design And Fabrication Of Electric Bike	UG
		Performance Prediction Of Solar Still Using Ann	UG
		Unmaned Aerial Vehicle	UG

## Publications

Publications	SCI / Scopus / Web of Sciences	Others
Journal	35	
Conferences	28	

### Journal Publications (IEEE format)

#### 2007

1. Hema C.R., Paulraj M.P., Nagarajan R., Sazali Yaacob, Segmentation and Location Computation of Bin Objects, *International Journal of Advanced Robotic Systems* Vol. 4 No. 1(2007) ISSN 1729-8806, pp 57-62. *Impact Factor 0.326*
2. Hema C.R., Paulraj M.P., Nagarajan R., Sazali Yaacob, Stereo Sensors Based Object Segmentation and Location for A Bin Picking Adept SCARA Robot, *Journal of Engineering Research and Education, Malaysia*, Vol. 4 2007, pp 11 -19 ISSN 1823-2981.
3. Hema C.R., Paulraj M.P., Nagarajan R., Sazali Yaacob, Object Recognition Using Image Matrix Decomposition And Neural Networks, *Iraqi Journal For Electrical And Electronic Engineering., Iraq.* Vol. 3 No.1 2007, pp 60-64. ISSN 1814-5892
4. Hema C.R., Paulraj M.P., Nagarajan R., Sazali Yaacob, 'Stereo Vision System for A Bin Picking Adept Robot' *Malaysian Journal of Computer Science, Malaysia.* Volume 20, number 1, 2007, pp 91 -96 ISSN 0127-9084. *CITATIONS:1*

#### 2008

5. Hema C.R., Paulraj M.P., Nagarajan R., Sazali Yaacob, Abdul Hamid , 'Application of Particle Swarm Optimization for EEG Signal Classification', *International Journal of Biomedical Soft Computing and Human Sciences*, Japan, Vol.13, No. 1, pp 87-92, March 2008, ISSN1345-1529, *Impact Factor 0.8. CITATIONS:6*
6. Paulraj M.P., Hema C.R., Nagarajan R., Sazali Yaacob, Abdul Hamid 'Classification of EEG Mental Tasks using PSO Neural Network for Brain Machine Interfaces' *International Journal of Modeling , Measurement and Control in Bio Engineering-(AMSE)*, Spain , Vol. 69, No. 2, pp.20-33, 2008.
7. Hema C.R., Paulraj M.P., Nagarajan R., Sazali Yaacob, Abdul Hamid, 'Brain Machine Interface: Analysis of Segmented EEG Signal Classification Using Short-Time PCA and Recurrent Neural Networks' *International Journal of Electrical and Electronic Engineering, Iraq*, Vol.4, No.1. pp. 77- 85, 2008, ISSN 1814-5892.
8. Hema C.R., Paulraj M.P., Sazali Yaacob, Abdul Hamid Adom, Nagarajan R, 'Motor Imagery Signal Classification for a Four State Brain Machine Interface', *International Journal of Medicine and Medical Sciences (IJMMS)* ISSN: 2073-2686, France, Vol.3, No.1, pp 76-81 , December 2008, *CITATIONS:7*

## 2009

9. Hema C.R., Paulraj M.P., Sazali Yaacob, Abdul Hamid Adom, Nagarajan R, 'Brain Machine Interfaces: A Comparison between Fuzzy and Neural Classifiers', *International Journal of Innovative Computing, Information and Control*, Taiwan, Vol.5, No. 6 , ISSN 1349 4198, pp.1819-1827 June 2009m, Impact Factor 1.537 Cited in Scopus
10. Hema C.R., Paulraj M.P., Nagarajan R., Sazali Yaacob, Abdul Hamid, 'EEG Motor Imagery Classification of Hand Movements for a Brain Machine Interface', *International Journal of Biomedical Soft Computing and Human Sciences*, Japan., Vol.14. , No. 2, pp.49-56, 2009, ISSN1345-1529, Impact Factor 0.8.
11. Hema C.R., Paulraj M.P., Sazali Yaacob, Abdul Hamid Adom, Nagarajan R, 'Brain Machine Interfaces: Recognition of Mental Tasks using Neural Networks and PSO Learning Algorithms', *Journal of Electrical & Electronic Systems Research (JEESR)*, Malaysia, Vol. 2, pp.11-20, June 2009, ISSN 1985-5389.

## 2010

12. Hema C.R., Paulraj M.P., Sazali Yaacob, Abdul Hamid Adom, Nagarajan R, 'An Analysis of the Effect of EEG Frequency Bands on the Classification of Motor Imagery Signals', *International Journal of Biomedical Soft Computing and Human Sciences*, Japan., Vol.16,No.1,pp.121-126 , 2010 , ISSN1345-1529 Impact Factor 0.8
13. Hema C.R., Paulraj M.P., Sazali Yaacob, Abdul Hamid Adom, Nagarajan R, 'Comparison of Static and Dynamic Neural Network Classifiers for Brain-Machine Interfaces', *International Journal of Electrical & Electronic Systems Research (IEESR)*, Malaysia, Vol. 3, 2010.

## 2012

14. Paulraj M P, Abdul Hamid Adom, Hema C R, Divakar Purushothaman 'Analysis of Visual Colour Perception using EEG Spectral Features' , *Karpagam Journal of Computer Science*, India, Vol. 6 Issue1, Jan-Feb 2012.
15. Hema C.R., Paulraj, M.P., 'Four State Brain Machine Interface Design using Functional Link Networks', *International Journal of Electrical & Electronic Systems Research (IEESR)*, Malaysia, Vol. 5, 2012, pp 42-46, ISSN 1985-5389.
16. Paulraj M. P., Mohd Shuhanaz Zanar Azalan, Hema C.R, Rajkumar Palaniappan,'Image Quality Assessment using Elman Neural Network Model and Interleaving Method', *International Journal of Human Computer Interaction (IJHCI)*, Volume (3) : Issue (3) : 2012
17. Paulraj M.P, Abdul Hamid Adom, Hema C.R, Sathish Kumar Sundararaj, 'Acoustic Signature Recognition of Moving Vehicles using Elman Neural Network', *Karpagam Journal of Computer Science* Vol. 6, Issue: 4 pp: 183-189 May-June, 2012

18. Hema C.R, Vivian Tang Sui Lot, Paulraj M.P, 'Design and Development of a Gripper System for an Indoor Service Robot, *Karpagam Journal of Computer Science* Vol. 6, Issue:4 May-June, 2012 pp: 196-203
19. Paulraj M. P., Abdul Hamid Adom, Hema C.R, Divakar Purushothaman Analysis of Visual Colour Perception using EEG Spectral Features, *Karpagam Journal of Computer Science* Vol. 6, Issue:2 pp: 74-80. Feb 2012

## **2013**

20. B.S. Jawahar ali, Hema C.R Effectiveness of Mantras as a stress buster- A Review *Karpagam Journal of Computer Science* Vol. 7, Issue:4 pp: 184-192 May-June 2013
21. Hema C.R, Revathi. S, 'A Preliminary study on Aromatherapy as a Stress Buster using EEG Signal Analysis' *Karpagam Journal of Computer Science* Vol. 7, Issue:3 pp: 160-167 March-April 2013
22. Hema C.R, Ramkumar. S, 'Recognition of Eye Movement Electrooculogram signals using Dynamic Neural Networks' *Karpagam Journal of Computer Science* Vol. 7, Issue:6 Sep-Oct 2013 pp: 312-319
23. Paulraj M. P., Abdul Hamid Adom, Sazali Yaacob, Hema C.R, Erdy Sulino Mohd Muslim Tan, Sathees Kumar Natraj,' EEG Based Communication System in Generalized and Customized Modes for Differentially Abled Communities', *International Journal of Electrical & Electronic Systems Research* (IEESR), Malaysia Vol 6,pp:18-30, June 2013
24. M.P. Paulraj, C.R. Hema, Sazali Yaacob, Mohd. Shuhanaz, Rajkumar Palaniappan, 'Gesture Recognition System using 2D-invariant moment feature and Elman neural network', *International Journal of Artificial Intelligence and Soft Computing*, InderScience, Vol 3, no.4 2013.

## **2014**

25. Hema C.R, Paulraj M.P & Ramkumar S, 'Classification of Eye Movements Using Electrooculography and Neural Networks', *International Journal of Human Computer Interaction* Vol.5 (3), pp.51-63 Aug 2014.
26. Hema C.R, Ramkumar S., Paulraj M.P, Identifying Eye Movements Using Neural Networks for Human Computer Interaction; *International Journal of Computer Applications* Vol.105 (8), pp.18-26 Nov 2014.
27. Hema C.R, Elakkiya A, Paulraj M.P, 'Biometric Identification system Using Electroencephalography' *International Journal of Computer Applications* Vol.106 (15), pp.17-22 Nov 2014.

## **2015**

28. Priyanka Parvathy Dali, Hema C.R, Vision Based Gesture Recognition System, *International Journal of Computer Sciences and Engineering (IJCSE)* Vol 3, Issue 3, ISSN 2347-2693, pp: 62-67 March 2015
  29. Priyanka Parvathy Dali, Hema C.R, Interpretation of Hand gestures using Neural Networks – A Review, *International Journal of Computer Science and Information Technologies (IJCSIT)* Vol. 6, Issue 2, ISSN 0975-9646, 2015, pp: 62-67 , 2015
  30. Azeemsha Thacham Poyil and C. R. Hema, EEG Feature Extraction in Brain-Mobile Phone , *British Journal of Applied Science & Technology* 8(5): 506-520, 2015
  31. Hema C.R, Elakkiya A, “Biometric Authentication using Brain Signatures”, *Karpagam Journal of Computer Science*, Vol 9, Issue 3, March –April 2015, pp:144-154.
  32. Paulraj M.P. , Kamalraj S., Hema C.R., Classification of Hearing Perception Level using Auditory Evoked Potentials, *Journal Technology*, Sep 2015, 77:28, 73-78.  
Paulraj M.P. , Kamalraj S., Sazali Yaacob , Abdul H Adom, Hema C.R., Auditory evoked Potential Response and Hearing Loss, *The Open Biomedical Engineering Journal*, 2015, 9,19-24.
- K.P. Sridhar, Hema C.R., Design and Analysis of a Borewell Gripper System for Rescue. *ARPJ Journal of Engineering and Applied Sciences*, Vol. 10, No. 9, May 2015, 4029 -4035.

## **2016**

33. Priyanka Parvathy. D, Hema C. R., Hand Gesture Identification using Preprocessing, Background Subtraction and Segmentation Techniques, *International Journal of Applied Engineering Research*, Vol 11, No. 5 (2016) pp 3221-3228

## **2017**

- 34.KP Sridhar, CR Hema, S Deepa, Design of a Wireless Sensor Fusion System to Analyze Conditions inside Bore Wells, - *Wireless Personal Communications*, Springer US, Jan 2017, pp 1-12.
- 35.Radhakrishnamurthy, Hema Chengalvarayan et al. Stereo Vision System for A Bin Picking Adept Robot. *Malaysian Journal of Computer Science*, 20, 1, 91-98, June 2017. ISSN 0127-9084.

## **Conference Publications (IEEE format)**



## 2010

1. Hema C.R., Paulraj M.P., Sazali Yaacob, Abdul Hamid, Nagarajan R., A Four State Brain Machine Interface Design for a Wheelchair , *National Research Conference on Challenges and Innovations in Information Technology CIIT –2010*, pp 567-570, India ,March 2010.
2. Hema C.R., Paulraj M.P., Sazali Yaacob, Abdul Hamid, Nagarajan R., Synchronous Brain Machine Interface Design using Focused Time Delay Networks, *National Research Conference on Challenges and Innovations in Information Technology CIIT –2010*, pp 571-576, India ,March 2010
3. Paulraj M.P., Abdul Hamid, Hema C.R., Divakar. P., Colour Visual Tasks Classification for Brain Machine Interface, *National Research Conference on Challenges and Innovations in Information Technology CIIT –2010*, pp. 543-547, India, March 2010.

## 2011

4. Hema C.R., Paulraj M.P., 'Motor Imagery based Control Brain Machine Interface for a Power Wheelchair', *Fifth International Conference on Intelligent Systems and Control* Feb, 2011, India.
5. Paulraj M P, Abdul Hamid Adom, Hema C R, Divakar Purushothaman, " Classification of Color Visualization Tasks using Spectral Entropy" *International Conference on Computer Communication and Informatics (ICCCI)*, January 11th & 12th , 2011, INDIA.
6. Paulraj M P, Abdul Hamid Adom, Hema C R, Divakar Purushothaman, "Channel Selection using Statistical Analysis for EEG Color Visual Task Classification" *International Conference on Engineering, Science and Technology (ICEST)*, 7th & 8th April 2011, INDIA.
7. Divakar Purushothaman, M.P. Paulraj, Abdul Hamid bin Adom, and C.R. Hema, Frequency Band Selection for EEG Colour Visual Tasks using Spectral Energy Entropy, *Proceedings of the International Postgraduate Conference on Engineering (IPCE- 2011)*, UniMAP, Malaysia. Dec 2011
8. Hema C R, Paulraj M P, Abdul Hamid Bin Adom, Erdy Sulino Mohd Muslim Tan, Sathees Kumar, A Bimodal Brain Interface to Rehabilitate Paralyzed Individuals, *2nd International Conference on Simulation Modeling and Analysis - COSMA 2011*, Amrita School of Engineering, Coimbatore, India, pp. 676-679, 14-16 December 2011.
9. Paulraj M P, Hema C.R, Sazali Yaacob, Mohd Shuhanaz Zanar Azalan, Rajkumar Palaniappan, A Phoneme Based Sign Language Recognition System using Combined Blur and Affine Moment Interleaving feature and Neural Network, *2nd International Conference on Simulation Modeling and Analysis - COSMA 2011*, Amrita School of Engineering, Coimbatore, India, pp. 757-764, 14-16 December 2011.

10. Paulraj M. P Hema C.R, Sazali Bin Yaacob Abdul Hamid Adom Kamalraj Subramanian, Classification of EEG Signal for Biometric Authentication System, *Proceedings of the International Postgraduate Conference on Engineering (IPCE-2011)*, UniMAP, Malaysia. Dec 2011 B5-6-1 to B5-6-4
11. Paulraj M P, Hema C R, Sazali Bin Yaacob, Abdul Hamid bin Adom, Kamalraj Subramaniam, "Classification of EEG Signal for Biometric Authentication System", *Proceedings of Engineering Post Graduate Research Conference 2011*, Coimbatore, India, pp. B5.6.1 – B5.6.4, 19-20 December 2011.
12. Paulraj M P, Hema C R, Sazali Yaacob, Mohd Shuhanaz Zonar Azalan, Rajkumar Palaniappan, "A Phoneme Based Sign Language Recognition System using 2D-Moments Feature and Elman Neural Network", *Proceedings of Engineering Post Graduate Research Conference 2011*, Coimbatore, India, pp. B6.5.1 – B6.5.5, 19-20 December 2011.
13. Paulraj M P, Hema C R, Sazali Yaacob, Mohd Shuhanaz Zonar Azalan, Rajkumar Palaniappan, "A Phoneme Based Sign Language Recognition System using 2D-Moment Interleaved Feature and Elman Neural Network", *Proceedings of Engineering Post Graduate Research Conference 2011*, Coimbatore, India, pp. B6.6.1 – B6.6.5, 19-20 December 2011.
14. Paulraj M P, Abdul Hamid Adom<sup>1</sup>, Hema C R, Divakar Purushothaman, "Classification of EEG based Color Visualization Tasks", *Proceedings of Engineering Post Graduate Research Conference 2011*, Coimbatore, India, pp. B6.7.1 – B6.7.4, 19-20 December 2011.
15. Hema C.R., Paulraj M. P., Abdul Hamid Adom, K.F. Sim, Rajkumar Palaniappan; An Intelligent Vision System for Object Localization and Obstacle Avoidance for an Indoor Service Robot, *IEEE Student Conference on Research and Development (SCOReD)*, Pp:123-128, 2011

## 2012

16. Hema C.R., Paulraj M.P., Yaacob S., Adom A.H., Nagarajan R. Synchronous Brain Machine Interface Design using Focused Time Delay Networks, *Proceedings of International Conference on Man Machine Systems 2012*, Penang, Malaysia, 27- 28 February 2012, pp
17. Paulraj M P, Abdul Hamid Adom, Hema C R, Divakar Purushothaman Classification of EEG Colour Imagination Tasks Based BMI using Energy and Entropy Features, *Proceedings of International Conference on Man Machine Systems 2012*, Penang, Malaysia, 27- 28 February 2012, pp
18. Charlyn Pushpa Latha.G, Hema C.R, "Facial Emotion Recognition using EMG- a Guided Tour", *Proceedings of International Conference on "Design and Application of Structures , Drives, Communicational and Computing Systems"* ,K.L.N College of Information Technology, Madurai, 21-22,December,2012.

## 2013

19. Hema C.R., Rubia G., 'Recognition of Imaginary EEG Tasks for Brain Interfaces', *International Conference on Innovations in Communications, Information and Computing 2013* 9-11 January, Vijayamangalam, India.
20. Hema C.R., A. Elakiyya, 'Recognition of EEG Biographs using Backpropagation Neural Networks' *International Conference on Innovations in Communications, Information and Computing 2013* 9-11 January, Vijayamangalam, India.
21. Charlyn Pushpa Latha. G, Hema C.R., "A Review on Classifiers for Emotion Studies" *International Engineering Post Graduate Research Conference, ENGGPOS 2013*, Karpagam University, Coimbatore, Feb 15-16, 2013, pp: 239-247.
22. Elakiyya. A, Hema C.R., "Recurrent Neural Network Based Recognition of EEG Biographs", *International Engineering Post Graduate Research Conference, ENGGPOS 2013* Karpagam University, Coimbatore, Feb 15-16, 2013, pp: 221-224.
23. Rubia. G, Hema C.R., "Classification of Imaginary Tasks for a Three State Brain Machine Interface", *International Engineering Post Graduate Research Conference, ENGGPOS 2013* Karpagam University, Coimbatore, Feb 15-16, 2013, pp: 225-228.
24. Revathi. S, Hema C.R., "A Preliminary Study on Aromatherapy as a Stress Buster Using EEG Signal Analysis", *International Engineering Post Graduate Research Conference, ENGGPOS 2013* Karpagam University, Coimbatore, Feb 15-16, 2013, pp: 211-219.
25. Charlyn Pushpa Latha. G, Hema C.R., Paulraj M.P., "Neural Network Based Human Emotions on Electromyogram Signals", *International Conference on Advanced Computing and Communication Systems (ICACCS 2013)*, Coimbatore, December 19-21, 2013.

## 2015

26. Hema C.R, Laxmi Raja, EEG as a Neuro – Biomarker for Autism Diagnosis – A Review, *International Engineering Post Graduates Research Conference*, March 12-13, 2015, pp:146- 150.
27. Hema C.R, Charlyn Pushpa Latha. G Classification of Human Emotional States using Facial Electromyogram Signals; *International Engineering Post Graduates Research Conference*, March 12-13, 2015, pp:186- 192.
28. Hema C.R, Elakkiya. A and M.P. Paulraj, Biometric Authentication System using EEG Brain Signature; *International Engineering Post Graduates Research Conference*, March 12-13, 2015, pp:193- 199.

## Books / Book Chapters (IEEE format)

## 2007

1. Hema C. R., Sazali Yaacob, R. Nagarajan, Abd. Hamid Adom and Paulraj M. P , EEG Based Brain Machine Interface for Rehabilitation: A Guided Tour , *Springer Book Series IFMBE Proceedings, Springer Berlin Heidelberg ISBN 978-3-540-68016-1 (Print) 978-3-540-68017-8 (Online) pp 632-636, Vol. 15, 2007. Impact Factor 0.251*
2. C.R. Hema, Sazali Yaacob, Abdul Hamid Adom, M.P. Paulraj and S. Palaniswami, 'Recognition of EEG Mental Tasks for a Brain Machine Interface', *Modeling and Simulation (Emerging Methods towards Frontier Technologies in Chemical and Physical Sciences)* Allied Publishers Pvt. Ltd., India. ISBN 81-8424-291-0, pp 1176 - 1180, Vol. 2, 2007. 2008
3. C.R. Hema ,Paulraj M.P., Sazali Yaacob, Abdul Hamid, Nagarajan R., "Particle Swarm Optimization Neural Network based Classification of Mental Tasks" *IFMBE Proceedings, Volume 21, pp 883-888 Springer Berlin Heidelberg, 2008 , ISBN:978-3-540-69138-9 (Print) 978-3-540-69139-6 (Online) ISSN 1680-0737 July 30, 2008 Impact Factor 0.251 CITATIONS:2*

2010

4. Paulraj M.P., Hema C.R., Vision based Systems for Localization in Service Robots, *Robot Localization and Map Building*, In-Tech Publishers, Austria, Edited by: Hanafiah Yussof Publisher: InTech, March 2010 pp. 309 -322 ISBN 978-953-7619-83-1

2011

5. Hema C.R., Paulraj M.P., Sazali Yaacob, Abdul Hamid Adom, R. Nagarajan, Asynchronous Brain Machine Interface based Control of a Wheelchair , *Software Tools and Algorithms for Biological Systems, Advances in Computational Biology, Springer Book Series, USA. June 2011, Vol. 696, pp 565- 572, ISBN 978-1-4419-7045-9 (Indexed in: Medline, Scopus, EMBASE, BIOSIS, Biological Abstracts, CSA, Biological Sciences and Living Resources, and Biological Sciences)*
6. C.R. Hema, Paulraj M.P., "Control Brain Machine Interface for a Power Wheelchair" *IFMBE Proceedings, Volume 35, Part 9, 287-291 Springer Berlin Heidelberg, 2011, ISBN: 978-3-540-69138-9 (Print) 978-3-540-69139-6 (Online) ISSN 1680-0737, 2011 Impact Factor 0.251.*

2013

7. Charlyn Pushpa Latha.G, Hema C.R., "A Review on Classifiers for Emotion Studies" *Emerging Trends in Engineering Research Bonfring, India, 2013 ISBN (978-93-82338-32-1) pp: 239-247.*
8. Elakkiya.A, Hema C.R., Recurrent Neural Network Based Recognition of EEG Biographs", *Emerging Trends in Engineering Research Bonfring, India, 2013 ISBN (978-93-82338-32-1) pp: 221-224.*

9. Rubia.G, Hema C.R., Classification of Imaginary Tasks for a Three State Brain Machine Interface”, *Emerging Trends in Engineering Research* Bonfring, India,2013 ISBN (978-93-82338-32-1), pp: 225-228.
10. Revathi.S, Hema C.R.,”A Preliminary Study on Aromatherapy as a Stress Buster Using EEG Signal Analysis”, *Emerging Trends in Engineering Research* Bonfring, India,2013 ISBN (978-93-82338-32-1), pp: 211-219.

2015

11. Hema C.R, Laxmi Raja EEG as a Neuro – Biomarker for Autism Diagnosis – A Review, *Recent Developments in Engineering Research* ISBN 978-93-84743-55-0 Bonfring, March 2015 pp: 146- 150.
12. Hema C.R, Charlyn Pushpa Latha. G Classification of Human Emotional States using Facial Electromyogram Signals, *Recent Developments in Engineering Research* ISBN 978-93-84743-55-0 Bonfring, March 2015 pp:186- 192.
13. Hema C.R, Elakkiya. A and M.P. Paulraj, Biometric Authentication System using EEG Brain Signature *Recent Developments in Engineering Research* ISBN 978-93-84743-55-0© 2015 Bonfring, pp: 193- 199.

### Book Publications

1. Hema C.R. ‘*A Stereo Vision System for Robots in Bin Picking Applications*’, University Malaysia Sabah, June 2005, Malaysia.
2. **Hema C.R., *Intelligent Vision Systems Laboratory Module***, University Malaysia Perlis, Malaysia, 2006, 2007.
3. Hema C.R., Paulraj M.P., *Machine Vision Teaching Module*, University Malaysia Perlis, Malaysia, 2008, 2009.
4. **Hema C.R., *Digital Signal Processing and Applications Laboratory Module***, University Malaysia Perlis, Malaysia, 2009.
5. **Hema C.R., *Machine Vision Laboratory Module***, University Malaysia Perlis, Malaysia, 2007, 2008, 2009.
6. **Hema C.R., *Robotic Vision Laboratory Module***, University Malaysia Perlis, Malaysia, 2009.
7. Hema C.R. ‘*Brain Machine Interface Controlled Robot Chair*’, University Malaysia Perlis, January 2010, Malaysia. <http://hdl.handle.net/123456789/9860>
8. Hema C.R. ‘*A Brain Interface for A Robot Chair*’ LAP LAMBERT Academic Publishing, Germany, 2010 , ISBN (978-3-8433-6187-3)

### Sponsored Research

Project Title	Funding Agency	Amount Rs.	Duration
Development of Brain Robot Interface to Rehabilitate Paralyzed Individuals (only Technical Sanction was Awarded)	Karpagam University	Rs. 63.33 lakhs	2014 -2017
Gripper System Design and Development for a Robot Assistant Position Held: Mentor	Karpagam University	Rs 7000	2011 - 2012.
Fundamental Study on the Development of Patient Monitoring System. Position Held: Co- Investigator	Institution: University Malaysia Perlis.	Rs.6, 48,000	2010 -2011.
Design and development of a mobile platform for a Robot Assistant System. Position Held: Mentor	Karpagam University	9500	2011 -2012.

### Consultancy

S. No.	Organization/ Agency	Nature of Work	Amount in Rs.	Year

### Workshops / Seminars attended

1. Workshop on **Strategy Planning 2009**, Sungai Petani, Malaysia, May 2009
2. Workshop on **Balanced Scorecard** at KUKUM, Malaysia, January 2007.
3. Workshop on Outcome Based Education (OBE) at KUKUM, February 2006.
4. Workshop on Strategy Planning, Pangkor Island , Malaysia, Dec 2005
5. Short Term Course on **Computer Networking** at Indian Institute of Technology, Madras, March 2003.
6. Training Program on Inventory Management System of TN Electricity Board, Madras, and December 2001.
7. Training Program on High Tension Billing (Oracle 8i) of TN Electricity Board, Madras December 2000.
8. Training Program on Low Tension Billing Software of TN Electricity Board, Madras , March 1999

9. Training program on High Tension Billing Software (Fox-Pro) of TN Electricity Board, Madras – August 1999.
10. Diploma in RDBMS in Oracle Ver. 8.0 with D2K - July 1998.
11. Certified Course on AS 400 Main Frame Computers, OS/400, DB2/400, SQL/400, CL/400, and RPG/400 from 13<sup>th</sup> August 1997 to September 1997.

#### **Faculty Development Program attended (from recent)**

#### **Events Organized (from recent)**

1. ISPRC-IDEATHON
2. SRIT-HACKATHON
3. ISPRC- SCIENCE DAY

#### **Conference**

1. Virtual Conference on Communication, Computation, Control and Automation on 07, 08 April 2022.

#### **FDP**

1. Orientation programme for the newly joined faculty members, 05-09 June 2023
2. FDP on Outcome Based Education for Inductee Teachers, 02-06 January 2023
3. FDP on Electric vehicle Architecture and Integration, 7-12 December 2022

#### **Workshops**

1. Workshop on Arduino For Beginners–Learn With Hands On Lessons On 15/9/2022
2. Workshop on Simulation Of Electrical Circuits Using Tinker Cad
3. Workshop on 3D Printing
4. Electrical Vehicle Workshop

#### **Seminars**

1. Arduino For Beginners–Learn With Hands On Lessons
2. Guest Lecture EEG Signals Processing For Bio-Medical Applications
3. Seminar On Future Trends In Autonomous Vehicle

### **Awards and Recognitions Secured**

1. Anugerah Seri Gemilang UniMAP 2009 (Rs.67500). Research Excellence award for product 'An Intelligent Brain Interface for a Robot Chair'
2. Anugerah Seri Gemilang UniMAP 2009 (Rs.54000). Research Excellence award for product 'Brain Controlled Rehabilitative Wheelchair for People with Special Needs'
3. Anugerah Seri Gemilang UniMAP 2008 (Rs.104000). Research Excellence award for product 'An Intelligent Sensor for Reversing Vehicles' (EUREKA).
4. Anugerah Seri Gemilang UniMAP 2008 (Rs.39000). Research Excellence award for product 'An Intelligent Real Time System for Converting Sign Language into Voice'.
5. Anugerah Seri Gemilang UniMAP 2007 (Rs.65000). Research Excellence award for product 'An Intelligent Sensor for Reversing Vehicles' (PECIPTA).
6. Anugerah Seri Gemilang UniMAP 2007 (Rs.39000). Research Excellence award for product 'Child Care System: Avoid Accident to Children behind Reversing Cars'.

### ***Best Thesis Award***

- Best Thesis Award for 2009 received from University Malaysia Perlis for PhD thesis titled 'A Brain Machine Interface Controlled Robot Chair'

### ***Best Paper Award***

- Hema C.R., **Paulraj M.P.**, Sazali Yaacob, Abdul Hamid, Nagarajan R., "Particle Swarm Neural Network Based Classification Of EEG Mental Tasks", *4th IEEE International Colloquium on Signal Processing and its Applications.(CSPA) 2008*, K. L., Malaysia 7 – 9 Mar 2008, pp 347 -350.

### ***Research Awards***

Awards received at National and International Expositions for Research Products

#### ***INTERNATIONAL***

1. **BRONZE MEDAL 18<sup>th</sup> International Invention, Innovation and Technology Exhibition 2007**, Kuala Lumpur, Malaysia. 'Child Care System for Reversing Vehicles'
2. **GOLD MEDAL International Exposition of Research and Inventions of Institutions of Higher Learning 2007**, Kuala Lumpur, Malaysia. 'Intelligent Sensors for Reversing Vehicles'



3. **GOLD MEDAL, EUREKA, The Belgian and International Trade Fair for Technology Innovation 2008, Brussels, Belgium.** 'Intelligent Sensors for Reversing Vehicles'
4. **GOLD MEDAL, UniMAP Research Exposition 2008, Kangar, Malaysia,** 'Thought Controlled Rehabilitative Wheels for People with Special Needs'
5. **SILVER MEDAL, 20<sup>th</sup> International Invention, Innovation and Technology Exhibition 2009, Kuala Lumpur, Malaysia.** 'Brain Controlled Rehabilitative Wheelchair for People with Special Needs'
6. **GOLD MEDAL, International Exposition of Research and Inventions of Institutions of Higher Learning 2009, Kuala Lumpur, Malaysia.** 'Intelligent Brain Interface for a Robot Chair'
7. **BRONZE MEDAL , International Malaysian Technology Expo 2010, Kuala Lumpur,** 'An Intelligent Bimodal Rehabilitative Device for the Voice and Movement Impaired using Brain Signals'
8. **SILVER MEDAL , International Malaysian Technology Expo 2010, Kuala Lumpur,** 'Voiceless Voice: An Intelligent Communication System for Physically Retarded Communities'
9. **GOLD MEDAL, International Engineering Invention & Innovation Exhibition (i-ENVEX 2013), Universiti Malaysia Perlis, Malaysia,** 'Child Rescue System for Bore well Disasters'
10. **KOREAN SPECIAL AWARD and GOLD MEDAL International Engineering Invention & Innovation Exhibition (i-ENVEX 2013), Universiti Malaysia Perlis, Malaysia,** 'Child Rescue System for Bore well Disasters'
11. **SILVER MEDAL, International Engineering Invention & Innovation Exhibition (i-ENVEX 2013), Universiti Malaysia Perlis, Malaysia,** 'E-Learning Tool for children with Autism Disorders'
12. **BRONZE MEDAL, International Engineering Invention & Innovation Exhibition (i-ENVEX 2013),Universiti Malaysia Perlis, Malaysia,** 'Facial EMG Recognition System for Human Robot Interaction'
13. **SILVER MEDAL, International Engineering Invention & Innovation Exhibition (i-ENVEX 2014), Universiti Malaysia Perlis, Malaysia.** 'Human Computer Interface System using EOG'
14. **LEADING INNOVATION AWARD , International Intellectual Property Network Forum of Japan award at International Engineering Invention & Innovation Exhibition (i-ENVEX 2014), Universiti Malaysia Perlis, Malaysia,** 'Human Computer Interface System using EOG'
15. **SILVER MEDAL, International Invention, Innovation & Design (IIID) Johor 2015, Malaysia organised by Universiti Technology Mara, 28 October 2015,** 'Bimodal Interface Wheelchair to Rehabilitate Paralyzed People'
16. **GOLD MEDAL, World Invention Creativity Olympic 2018 organised by Korea University Invention Association, Seoul, South Korea, 2-4 August 2018.** 'Collar Cleaning Machine'
17. **BEST LEADING INNOVATION AWARD, Macao Innovation and Invention**

- Association award at World Invention Creativity Olympic 2018 organised by Korea University Invention Association, Seoul, South Korea, 2-4 August 2018. 'Collar Cleaning Machine'.
18. SPECIAL AWARD, Norton University, Kingdom of Cambodia award at World Invention Creativity Olympic 2018 organised by Korea University Invention Association, Seoul, South Korea 2-4 August 2018. 'Collar Cleaning Machine'.
  19. GOLD AWARD, International Innovations Creativity and Technology Exhibition 'i2Create' 2019 Kuala Lumpur, 12-14 April 2019 organised by Malaysian Research and Innovation Society, Intelligent Milk Box
  20. SILVER AWARD, International Innovations Creativity and Technology Exhibition 'i2Create' 2019 Kuala Lumpur, 12-14 April 2019 organised by Malaysian Research and Innovation Society, Automatic Fishing Boat
  21. 'i2Create' Grand Award (International Category), **International Innovations Creativity and Technology Exhibition 'i2Create' 2019** Kuala Lumpur, 12-14 April 2019 organised by Malaysian Research and Innovation Society, Mehndi Applier Machine
  22. WIIPA SPECIAL AWARD, International Innovations Creativity and Technology Exhibition 'i2Create' 2019 Kuala Lumpur, 12-14 April 2019 awarded by World Invention Intellectual Property Association Taiwan, Intelligent Milk Box
  23. SPECIAL AWARD, International Innovations Creativity and Technology Exhibition 'i2Create' 2019 Kuala Lumpur, 12-14 April 2019 awarded by Norton University, Kingdom of Cambodia, Cambodia Automatic Fishing System
  24. EXCELLENT AWARD, International Innovations Creativity and Technology Exhibition 'i2Create' 2019 Kuala Lumpur, 12-14 April 2019 awarded by Korea University Invention Association, South Korea Mehndi Applier Machine
  25. GOLD MEDAL, 4th International Art Creativity and Engineering Exhibition I+ACEH 2019, Banda Aceh, Indonesia, 1-2 October 2019, "Mehandi Designer Traditional Decorative Designs Applier Machine.
  26. GOLD MEDAL, 4th International Art Creativity and Engineering Exhibition I+ACEH 2019, Banda Aceh, Indonesia, 1-2 October 2019, "Ecofriendly Dye Extraction from Cyanophyta for Textiles.
  27. SPECIAL AWARD, 4th International Art Creativity and Engineering Exhibition I+ACEH 2019, Banda Aceh, Indonesia, 1-2 October 2019, "Ecofriendly Dye Extraction from Cyanophyta for Textiles.
  28. SPECIAL AWARD from Asian Innovation Association at 4th International Art Creativity and Engineering Exhibition I+ACEH 2019, Banda Aceh, Indonesia, 1-2 October 2019, "Mehandi Designer Traditional Decorative Designs Applier Machine.
  29. GOLD MEDAL , *Engineering Invention and Innovation Exhibition 2009, UniMAP, Malaysia 'ROOMBOT – A Housekeeping Robot'*
  30. SPECIAL AWARD (Category Electronic Technology) , *Engineering Invention and Innovation Exhibition 2009, UniMAP, Malaysia 'ROOMBOT – A Housekeeping Robot'*

31. GOLD MEDAL , *National Research and Innovation Competition 2009, University Science Malaysia, Malaysia, 'ROOMBOT – A Housekeeping Robot'*
32. MOTOROLA INNOVA Award , *National Research and Innovation Competition 2009University Science Malaysia, Malaysia 'ROOMBOT – A Housekeeping Robot'*
33. BRONZE MEDAL , *Engineering Invention and Innovation Exhibition 2010, UniMAP, Malaysia, 'Brain Power Word Communication System'*
34. BRONZE MEDAL, *Engineering Invention and Innovation Exhibition 2010, UniMAP, Malaysia, 'A Biometric Authentication System using Brain Signatures'*

**Self-appraisal**

**Major Strengths:**

**Major Weakness**

**Signature**