



## Activity Report - 2021

Following activities are conducted to enhance the technical knowledge in the areas of computational intelligence, machine learning, artificial intelligence, soft computing for professionals, faculty and students of engineering courses by giving preference to IEEE members with some benefits to IEEE CIS members. These activities have motivated the professional, faculty and student community to become membership and has in turn helped the growth of technical professionals in the areas of IEEE CIS.

### **Contents:**

1. Faculty Development Program Artificial Intelligence, Machine learning and Deep learning” from 1st to 5th Feb 2021, Collaborators UVCE and AICTE ATAL
2. Workshop on Quantum Information System and Machine Learning
3. Workshop on Applied AI
4. Webinars on Edge Computing in Enterprise Energy Management System
5. Webinar on Microservices: Evolving Cloud Architecture Patterns
6. Technical Talk on Technologies for Agriculture and Food Processing
7. Technical Talk on Medical Technologies for Health and Well being



Following are the activities conducted for the year 2021 under IEEE CIS.

## **1. Faculty Development Program Artificial Intelligence, Machine learning and Deep learning” from 1st to 5th Feb 2021, Collaborators UVCE and AICTE ATAL**

Topics include - Emerging Advancement Using Computational Intelligence , Bringing Cognition in the Edge and solving real life problems using Cognitive Computing, Transfer Learning, Meta Learning and Generative Adversarial Neural Network, Application of Deep learning in Medical Image Analysis and Classification, Anomaly Detection in Network Using Artificial Intelligence. Natural Language Processing, CNN Models - VGGNet (Hands-on) Valedictory and Online Assessment.

## **2. Workshop on Quantum Information System and Machine Learning (5 Days)**

Many changes have been noticed in human interaction with and relative to data that achieved noteworthy success using machine learning in various areas of applications. Mainly, this revolution faces increasing challenges due to limited computational power and the growing size of datasets. Information is fundamentally governed by the laws of physics and quantum mechanics that can enhance our information-processing abilities. This can be achieved by using Quantum concepts that can be an unprecedented advantage and can motivate for the generation of various applications with the use of more Quantum information process that has a major scope towards the research area. Considering the development needed, this is the time to build a bridge between machine learning & quantum information. Also, more interaction among these areas can lead towards the development of machine learning algorithms to find an application that can understand and control quantum systems. On the other hand, quantum computational devices promise enhancement in the performance of machine learning algorithms for problem-solving. This workshop was to foster the interaction from experts among academicians, industrialists and other research institutes that can be related with interdisciplinary topics.



### 3. Workshop on Applied AI - 1 Day

A workshop was hosted on applied AI. The workshop was divided into two parts consisting of the theoretical and practical parts. In the theoretical part, students got to learn about the differences between machine learning and deep learning, supervised and unsupervised learning, Data Pipeline for AI, fundamentals of neural networks, gradient descent, and the usage of a convolutional operator on images. In the practical session, students got to learn about the usage of google colab for Machine Learning, the basics of matplotlib and numpy, and tensorflow for transfer learning. Students learned the following by coding a cat vs dog classifier using VGG-16.

### 4. Webinars on Edge Computing in Enterprise Energy Management System

This webinar gave an overview of GCT, Li-ion cells, their characteristics and types of Li-ion cells. In addition to this, relevance of these cells in battery management system(BMS), IoT in BMS and challenges in connected devices were presented to the participants along with the concept of edge computing

### 5. Webinar on Microservices: Evolving Cloud Architecture Patterns - Webinar

Every day, our needs are changing, and these changes are happening on a dynamic scale. For Instance, ten years before traffic wasn't a part of our urban life, today traffic is part of our livelihood. Similarly, the landscape of modern IT solutions is changing dynamically, and **Microservices** helps to cater to these needs in an energy-efficient and cost-efficient way. Microservices are an approach to distributed systems that have fine-grained services that can be changed, tested, scaled, and deployed independently of others. As part of this webinar agenda, we would look upon the Key concepts of microservices, Advantages of the microservices approach, The patterns and anti-patterns of Microservices, How to break a Monolith into Microservices, and How **Cloud** can enable a faster way to hit production.



## **6. Technical Talk on Technologies for Agriculture and Food Processing**

This event was organised to raise High School Science and Technology literacy level using Engineering students as ‘Ambassadors of Education’. It was conducted by IEEE CIS student branch of Ramaiah Institute of Technology, Bengaluru for high school students of rural and urban areas. The program covered topics on the need of technologies in agriculture, smart farming using drones & robots, and technological advancements in food processing.

## **7. Technical Talk on Medical Technologies for Health and Well being**

The Major aim of the program was to raise the national high school literacy level. We believe that youth in colleges like us have a responsibility towards the endogenous growth of the country, and the best way is to share our knowledge and motivate the youngsters in the schools to take up higher education in Science and Technology and even towards research. We used Presentations and Videos to interact with high school students on our topic of Medical Technology and motivate them towards higher education. Pedagogy enabled us to influence students and capture their attention. The use of video encouraged the students to interact, and it made them understand the topics in a better way.

### **The Following events are planned for 2022**

- Local Industry interactions
- Guest Lectures
- Training programs
- Academic Curriculum Development
- Partial Delivery of courses
- Vocational Training

Organizing Team	Date	Speaker	Affiliation	Participants (approx)	Effective Event count
<b>Faculty Development Program Artificial Intelligence, Machine learning and Deep learning</b>	<b>01/02/2021</b>	Dr. Venugopal K R,	Vice Chancellor, Bangalore University	85	2
		Dr. Sarada Prasad Gochhayat	Research Assistant, VMASC, Virginia USA		
		Dr. Rathna G N	Principal Research Scientist, EE, IISc, Bangalore		
	<b>02/02/2021</b>	Dr. Nishant Krishna	Chief Technology Officer, TechMachinery Labs	85	2
	Dr. Swapnil S Ninawe	Scientific Officer, ASTML, U K			
	Mr. Chethan Shivakumar	CEO and Co-Founder AiKaan Lab Pvt. Ltd.,			
	<b>03/02/2021</b>	Dr. Manjunatha Y R	Professor, Dept. of EEE UVCE, Bangalore	85	2
		Prof. Himanshu Madhu	Prof. Siva Teja Kakikelti		
		Dr. Vinutha N	Assistant Professor, Jain University		
	<b>04/02/2021</b>	Dr. Deepak Ranjan Nayak	Assistant Professor, Dept. of CSE, Malaviya National Institute of Technology Jaipur	85	2
			Assistant Professor,		

		Dr. Deepak Ranjan Nayak	Dept. of CSE, Malaviya National Institute of Technology Jaipur		
		Dr. Vijaya Kumar B P	Professor and Head, Dept. ISE, MSRIT		
	<b>05/02/2021</b>	Dr. Anand Kumar M	Assistant Professor, Dept. of ISE, NITK	85	2
		Dr. Venkatesh	Assistant Professor, University Visvesvaraya College of Engineering.		
<b>Workshop on Quantum Information System and Machine Learning</b>	<b>23/08/2021</b>	Dr. Satish Babu  Prof. S. J. Krishna Prasad  Dr. Minal Moharir	Prof.,RVCE, Bangalore  Assoc.prof.,MSRIT, Bangalore  Assoc.prof.,RVCE, Bangalore	87	2
	<b>24/08/2021</b>	Dr. Mrittunjoy Guha Majumdar  Dr. Guuraj, H L  Mr. Sriharsha Bommana	IISc, Bangalore  Assoc.prof.,VVCE, Mysore  AI Engineer, HyperVerge	87	2
	<b>25/08/2021</b>	Dr. Vijay Kumar B P  Dr. Ankur Raina  Dr. Tribikram Gupta	Prof.,MSRIT, Bangalore  IISER Bhopal  RVCE, Bangalore	87	2

	<b>26/08/2021</b>	Dr. Manjunath,  Mr. Yogesha Aralakuppe Ramegowda Mr. Karthik	Prof., BMSCE, Bangalore  Engineering Fellow, Honeywell Aerospace  Software Engineer at Grab Bangalore Urban	87	2
	<b>27/08/2021</b>	Dr. Mydhili Nair  Mr. Yogesha Aralakuppe Ramegowda  Mr. Rajesh K Jeyapaul	Prof.,MSRIT, Bangalore  Engineering Fellow, Honeywell Aerospace  Engineering Lead for AIOps @ IBM Labs, India	87	2
<b>Workshop on Applied AI</b>	<b>25 / 10 / 2021</b>	Mr.Athena Lobo  Mr. Nandan Herekar  Mr.Brihadeesh RK  Ms.Drithi Pai  Mr.Akshat Saxena  Mr.Jitesh Kamnani	MSRIT, Bangalore	143	2

<b>Webinars on Edge Computing in Enterprise Energy Management System</b>	<b>05/05/2021</b>	Madhusudhan. G  Siddharth. M	Engineering manager, Green cubes technology  COO, Aikaan	79	1
<b>Webinar on Microservices: Evolving Cloud Architecture Patterns</b>	<b>25/09/2021</b>	Mr M S Pawan Ranjith	Software Engineer at JP Morgan Chase & Co	80	1
<b>Technical Talk on Technologies for Agriculture and Food Processing</b>	<b>28/08/21-02/09/21</b>	Ms.Niveditha Bhat Mr.Washitwa Mani Jaiswal Ms.Yashaswini M Ms.Niharika H G	IEEE Student branch, MSRIT	45	6



<p><b>Technical Talk on Medical Technologies for Health and Well being</b></p>	<p><b>03/09/21-07/09/21</b></p>	<p>Ms. Omshree R Ms.Namratha M N Ms. Navya Kulkarni</p>	<p>IEEE Student branch, MSRIT</p>	<p>50</p>	<p>6</p>
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### Edge Computing In Enterprise Energy Management System

DATE : 05 MAY 2021 TIME : 4:30 - 5:30 PM

**Key Takeaways:**

- Introduction to enterprise battery management system (BMS) and tech stack
- Why edge computing and what problem does it solves for enterprise BMS
- Implementation & operational challenges of edge in BMS.

Register - <https://bit.ly/3sK06NE>



Modhansudhan Gangadharaiah  
Engineering Manager,  
Green Cubes Technology



Siddharth Munot  
COO, AIKAAN

Technically supported by IEEE Computational Intelligence Society, Bangalore Section

### RAMAIAH INSTITUTE OF TECHNOLOGY

(Autonomous Institute, Affiliated to VTU)  
(Approved by AICTE, New Delhi & Govt. of Karnataka)  
MSR Nagar, MSRIT Post, Bangalore - 560054, Karnataka

Five Days Online Faculty Development Programme on  
**Quantum Information Systems and Machine Learning**  
23<sup>rd</sup> August to 27<sup>th</sup> August 2021

Organized By  
Departments of Information Science & Engineering, Computer Science & Engineering, Master of Computer Applications  
in Collaboration with IEEE-CIS Bangalore Chapter


**Day 2 SCHEDULE**

Date	Time	Session	Topic	Speaker
Tuesday 24 <sup>th</sup> 08/2021	09.15 am-11.00am	1	Hyperscaling	Dr. Mithun Datta Majumdar Senior professional member of the Centre for Excellence in Quantum Technology Indian Institute of Science, Bangalore
	11.30am-1.00pm	2	Machine Learning for quantum computing	Dr. Guang, H.L. Associate Professor, Dept. of CSE IISc, Mysuru
	02.30pm-04.00pm	3	Google Org and Tensorflow Quantum	Mr. Srinivasa Bommanu AI Engineer in the Fraud Intelligence team Ekonfraga, Bangalore

Link for the session: [https://zoom.us/join?register=1&EzayyyoqG8D\\_Q8CMTLufyH7K9K8nR](https://zoom.us/join?register=1&EzayyyoqG8D_Q8CMTLufyH7K9K8nR)

### The Quirks of the Quantum

DR. MRITUNJOY GUHA MAJUMDAR  
Indian Institute of Science, Bangalore and University of Cambridge



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Title	Date	Host	Location	Reported On	Options
Microservices: Evolving Cloud Architecture Pattern	25 Sep 2021 10:30 AM	CH10598	Bangalore, Karnataka	27 Sep 2021	<a href="#">View</a>   <a href="#">Manage</a>
Quantum Information Systems and Machine Learning	23 Aug 2021 09:00 AM	CH10598	Bangalore, Karnataka	19 Oct 2021	<a href="#">View</a>   <a href="#">Manage</a>
Edge Computing & Enterprise Energy Management System Interaction with Local Industry	05 May 2021 04:30 PM	CH10598	Bangalore, Karnataka	27 Sep 2021	<a href="#">View</a>   <a href="#">Manage</a>
Artificial Intelligence, Machine Learning and Deep Learning	01 Feb 2021 10:00 AM	CH10598	Bangalore, Karnataka	27 Sep 2021	<a href="#">View</a>   <a href="#">Manage</a>
Perceptive Intelligence at the Edge	19 Dec 2020 10:00 AM	CH10598	Bangalore	07 Jan 2021	<a href="#">View</a>   <a href="#">Manage</a>
Cognitive Computing for Edge Intelligence	18 Dec 2020 10:00 AM	CH10598	Bangalore, Karnataka	07 Jan 2021	<a href="#">View</a>   <a href="#">Manage</a>
AR, VR and Distributed Analytics at the Edge	17 Dec 2020 10:00 AM	CH10598	Bangalore	04 Jan 2021	<a href="#">View</a>   <a href="#">Manage</a>
Edge Computing- An Industry Perspective	16 Dec 2020 09:00 AM	CH10598	Bangalore	04 Jan 2021	<a href="#">View</a>   <a href="#">Manage</a>
Edge Computing Spectrum and its Operational Challenges	15 Dec 2020 10:00 AM	CH10598	Bangalore	04 Jan 2021	<a href="#">View</a>   <a href="#">Manage</a>
Deep Learning, AI, Challenges and Opportunities in Edge Computing	14 Dec 2020 10:00 AM	CH10598	Bangalore	02 Jan 2021	<a href="#">View</a>   <a href="#">Manage</a>
One -week online Short-Term Training Programme On Intelligent Edge Computing Techniques	02 Nov 2020 09:30 AM	CH10598	Bangalore, Karnataka	13 Dec 2020	<a href="#">View</a>   <a href="#">Manage</a>



## **Projects proposals accepted/submitted to IEEE CIS HQ**

1. Local industry interactions - \$3988.66 USD – **Accepted**
2. High school outreach program- \$2000 USD – **Submitted**
3. Proposal on assistive technology in collaboration with NGO-National Association for Blind (NAB) - \$3000 USD - **Submitted**