

IEEE Kerala Section: Kochi Sub Section Events

ISED-2018 International Symposium on Embedded Computing & System Design (ISED 2018)



The 8th International Symposium on Embedded Computing & System Design (ISED 2018) was organised during 13-15 Dec 2018 in co-sponsorship with KSCSTE and CSIR and Technical Sponsorship by IEEE Kerala Section & Kochi Sub Section. The conf. was inaugurated by Sri. Mohammed Hanish IAS, MD of Kochi Metro Rail Limited on 13th Dec 2019. Dr. R Sasidharan, VC of CUSAT presided over the function.

Professor Dr. Supriya M.H., of the Department of Electronics welcomed the gathering. Dr. Bijoy, Programme Chair, ISED 2018 provided an overview of the conf. and its relevance. The Proceedings of ISED 2018 was released by Prof. Sandeep Shukla, General Chair, ISED 2018 and HoD/CSE, IIT Kanpur. Prof. Gerhard W. Dueck, Professor of Computer Science, University of New Brunswick offered felicitation. The inaugural session concluded with the Vote of Thanks by Dr. Tripti S Warrior, Assistant Professor, Department of Electronics, CUSAT.

ISED 2018 had six keynote addresses as given below:

- “Cyber-Physical System Security: Convergence of Electrical Engineering and Computer Science” by Prof. Sandeep K. Shukla, IIT was about cyber attacks and the need for improving security in our fast growing world.
- “Scalable and secure deployment of IoT devices” by Mr. Arvind Raju, Senior Architect, Intel Corporation, India explained about the different projects and development process happening in Intel.
- “Prospects and Challenges of Reversible Computing” by Prof. Gerhard W. Dueck, University of New Brunswick, Canada highlighted the research ongoing in his university and country.
- “Revamping Industrial Processes with Block chain” by Dr. V. Ramakrishna, Researcher, IBM Research India explained in detail about the block chain management and the process flow and control as well the role of IBM in the field of block chain management.
- “System Level Design Tool Set and RTOS for SoC FPGA” by Dr. Shinya Honda, Associate Professor, Graduate School of Informatics, Nagoya University addressed the RTOS design tools and its importance in chip level designing.
- “IoT and Embedded systems” by Dr. Lenin Gopal, Associate Professor, Curtin University, Miri, Malaysia explained in detail about embedded technology trends and its research scope.

The day one of the conf had technical sessions on Machine learning; VLSI System and Signal Processing; and Embedded Challenge in Industry.

After the end of day one sessions, a conference banquet was organised at RECCA club, Co-located with NITCAA and Kerala Start-up Mission.

On day 2 of the conf, the programme had parallel technical sessions in Communication Systems, Power-Aware Systems, System Design and Security, Embedded System Design, Signal Processing and VLSI System.

At the valedictory function Dr. Bijoy A. Jose, Program Chair of ISED 2018 addressed and thanked the gathering for the smooth conduct of ISED 2018. Certificates for best paper presentations was awarded to Sree Ranjani R from Amrita School of Engineering, Coimbatore, India on the paper “A Novel Logical Locking Technique against Key-guessing Attacks” and Purvi Patel from DA-IICT, Gandhinagar, India on the paper Low Power Management Unit with Load Regulation using DC-DC Switched Capacitor Converters in 0.18um CMOS.

Workshop on “Machine Learning”



A three-day workshop on “Machine Learning” was conducted in colocation with the IEEE Co-Sponsored 8th International Symposium on Embedded Computing and System Design, (ISED 2018) during 13-15 Dec 2018. This workshop/FDP was organized by Department of Electronics, CUSAT and Amazon Corporation in association with IEEE COMSOC Kerala Chapter.

A total of 62 participants from all over India attended the workshop. On the first day, the ISED 2018 included paper presentations in Machine Learning track. The participants got a brief idea on current areas of research in the field of ML. Eight papers were presented during the technical session and academicians from institutes like IITs, NITs and different Central and State Universities presented their papers.

On 13th Dec, software installation session was coordinated where the participants were directed to install necessary software required for the ML Workshop in their Laptop.

On 14th Dec, the first session was on familiarization of Amazon Web Services (AWS) by Mr. Sriram Kuravi, Solutions Architect-Cloud & IoT. He explained all the services provided over AWS and how to do projects over them. The participants got the insight of the real-time applications like Cloud Computing services over AWS like Amazon Sagemaker Ground Truth, Amazon Recognition, Amazon Comprehend, Amazon Polly, Amazon Lex, Amazon Transcribe and Amazon Translate. The next session directed by Mr. Sachin Rout, Research Associate from Amazon was an introduction to Artificial Learning, Machine Learning and Deep Learning. It was an informative session and the participants learned regarding the various parameters in Machine Learning and the difference between Deep Learning and Machine Many real-time applications and the collaboration of AI, ML with the Internet of Things (IoT) was discussed. It was followed by a detailed explanation of Artificial Neural Network and the architecture of the same.

In the next session, Mr. Arzan Amaria, Sr. Solutions Architect-cloud & IoT, explained the mathematical approach of an Artificial Neural Network and the mathematics and statistics behind it. Mr. Sachin Rout, Research Associate, took a session on Deep Learning and Shallow Learning. It was followed by a hands-on session where all the participants actively participated and the basic code for prediction and classification problem was carried on. Participants were explained about various platforms for Machine Learning applications. The QA sessions followed was very informative and interactive.



On the last day, 15th Dec, the participants had the first introduction of perceptron and Artificial Neural Network by Mithun Sir, Assitant Professor, Department of Electronics, CUSAT. He had explained the similarity of a biological neuron and Artificial Neuron, a perceptron. He further explained about working of a perceptron and different types of Neural Network. In the next session directed by Dilip Thomas was an interactive session on Computer Vision and Deep Learning in which various real-time applications of Computer Vision using Deep Learning like real-time object detection, Image segmentation, a decision based on the classification of the image were discussed. He had shown the implementation of Deep Learning in the Computer Vision and the applications. He later explained the basics of Convolutional Neural Network (CNN) and its working. He explained the various operations involved in a Convolutional Neural Network like convolution, pooling, noisy image data cancellation, striding. In the hands-on session participants were explained the working of the code of a binary image classification problem, the challenges in real-time applications and how to solve them. At the end of the workshop participation certificates were distributed.

ISSC - Intelligent Embedded Systems Challenge



An “Intelligent Embedded Systems Challenge (IESC)” was organised as a co-located event of the IEEE Co-Sponsored 8th International Symposium on Embedded computing & System Design (ISED 2018) in December 2018. This exciting competition for both academia and industry IESC was launched on 1st November 2018 to encourage innovative ideas from the participants. Identifying ideas in Intelligent, Embedded and Software/App controlled systems that can help people and society was the aim of this challenge.

Initially, the registered teams were requested to submit an abstract and report with its implementation, applications and future scope. Over 40 submissions from various academic institutions in the southern part of India were received. From these submissions, 30 teams were shortlisted to the next phase in which 15 minutes Skype interview was conducted with the team members.

Over a period of two weeks, a two-member panel had an interactive discussion with all the selected teams through Skype. Most of the teams were prepared for a demonstration of their project proposals. The coordinators were Dr. Tripti Warriar of DOE CUSAT and Thomas Sabu of IEEE. Based on the Skype evaluation, six teams were shortlisted for the final presentation and demonstration on 13th December 2018 at the ISED 2018 conf. held at CUSAT. The List of the teams shortlisted for the academic track are:

1. Zone Adaptive Response System from Muthoot Institute of Technology and Science, Varikoli, Kerala.
2. Smart Transport Supervise System from KLE Technological University, Hubli, Karnataka.
3. Web-Based Automated Farm Irrigation Control System using IoT from Multimedia University, Malaysia.
4. Real Time Garbage Monitoring Network form Department of Electronics, CUSAT, Kerala.
5. “I See It All” Implementation of Face Recognition Surveillance System Using FaceNet and MTCNN on Jetson TX2 from Department of Electronics, CUSAT, Kerala.
6. Driver Assistance Device from KLE Technological University, Hubli, Karnataka.

For the finals round, four out of the six teams shortlisted and had demonstration booths at the ISED venue which got a lot of attention from students and professionals. The last level evaluation consisted of a three-member team -- Sri Arvind Raju of Intel Corporation, Dr. Babita Jose of SOE, CUSAT and Dr. Deepti Das of DOE, CUSAT. The evaluation was based on demonstration, presentation and on criteria such as innovation, implementation and toughness of the project proposal

The team with the project proposal titled “Driver Assistance Device” from KLE Technological University, Hubli, Karnataka was chosen as the winner of IESC academic track. The prize money of Rs 25,000 sponsored by IEEE Circuits and Systems Society was presented to winners by Mr. Shilen Sagunan, organizer of the Entrepreneurship event by Kerala Startup Mission.

The industry track was won by “Basic Utility Lower Exoskeleton” from Astrex Innovations, Cochin.

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Eighty-two years old Pope Francis has become the first Pope of the Vatican City State to write a line of code. In Vatican City, Pope Francis with three young women aged between 11-16 years, contributed a line of code to an app aimed at promoting United Nations Sustainable Development Goals. Pope Francis wrote the last line of code.