Report of

TEQIP SPONSORED

INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN ENGINEERING, SCIENCE & TECHNOLOGY (ICETEST - 2015)

9 - 11 December 2015

Organised

by

GOVT. ENGINEERING COLLEGE , THRISSUR

INTRODUCTION

Govt. Engineering College , Thrissur has been one of the premier institutions for quality technical education in the state of Kerala, India, since its establishment in the year 1958. The second oldest Engineering College of the region, and the first established after formation of the State of Kerala , offers undergraduate degree programmes of B. Tech. in seven Engineering disciplines and B. Arch. in Architecture. It offers post graduate programmes of M. Tech. in ten disciplines spread under the various engineering departments and MCA programme under a separate department. Moreover, the institution is a major research centre for four branches of Engineering under the University of Calicut, and is an approved centre for research under the Quality Improvement Programme of MHRD, Govt. of India. With the funding from the TEQIP – Phase II since 2010, the institution has been able to scale up the research facilities, strengthen the post graduate and undergraduate programmes leading to improved employability of the graduates. The large number of ranks of the University bagged every year by the graduates from GECT is testimony to the very high academic standards maintained here. The College has a very renowned alumni strength, many of which are internationally and nationally acclaimed professionals, scientists, CEOs and entrepreneurs.

The college has been organizing its biennial International Conference on the title theme 'Materials for the Future' (ICMF) since the year 2009. The fourth International Conference in this series was conducted from 9^{th} to 11^{th} of December 2015 with the main conference theme having been revised to a broader and more comprehensive one, namely 'Emerging Trends in Engineering, Science and Technology' . The International Conference on Emerging Trends in Engineering, Science and Technology or ICETEST- 2015

was materialized by the constituent international conferences organized by the major Engineering and Science Departments of the institution, on sub-themes of current interest and development in the respective disciplines. It is hoped that the broadened scope/regime of the revised title would enable the conference to bring together on to one platform the current advancements in all disciplines of studies under Engineering and Science, in which the host institution, GECT has established itself as a highly successful premier institution during the last five decades.

The ICETEST-2015 comprised of seven constituent conferences ; held in the Departments of Civil Engineering, Mechanical Engineering, Electrical & Electronics Engineering , Chemical Engineering, Electronics & Communication Engineering, Computer Science & Engineering and School of Architecture , in the thrust areas of the respective disciplines. There were invited talks by experts and paper presentations by students and scholars from within the country and abroad.

INAUGURATION

The conference started with the inaugural function which was honoured by the presence of great academicians. Dr.Narayanan Menon Komerath from Daniel Guggenheim School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, Dr. Padamavathi P.,Vice Chancellor, Jawaharlal Nehru Architecture and Fine Arts University, Hyderabad , Dr. M. Chidambaram , Professor IIT Chennai , Dr. Satheesh Vasu Kailas, Professor IISC Bangalore and Dr. E. J. James, Former Director, CWRDM Calicut were the invited dignitaries.

Prof Krishnakumar of Mechanical Engineering Department of the host institution welcomed the guests. Dr P Vijayan of Civil Engineering Department gave an overview of the events to follow. Dr P Indiradevi, Principal of the college, delivered the Presidential address.

After lighting the lamp, Dr.Narayanan Menon Komerath in his inaugural address advised the students to use all the opportunities they get to learn other fields of engineering too.

A special address was given by Dr. Padmavathi P, Vice Chancellor, Jawaharlal Nehru Architecture and fine arts University, Hyderabad.

She said that the application of engineering technology should always focus on solving problems related to various field. She shared her thoughts that issues of sustainability are relevant in all discipline of technologies and we have to identify problems and find solutions through innovative applications.

ICETEST 2015 proceedings was released by Dr.Narayanan Menon Komerath and Dr. Padmavathi P.

Dr. M. Chidambaram , Dr. Satheesh Vasu Kailas and Dr. E. J. James, gave heir felicitations for the function.

First keynote address was delivered by Dr. Narayanan Menon Komerath, Professor, Daniel Guggenheim School of Aerospace Engineering, Georgia Institute of Technology, Atlanta on "Towards Indian Energy Independence".

He addressed the need of development of micro energy system to meet the energy struggle in the country and reduce the dependence on other countries for energy. Extensive use of renewable energy is necessary to meet the crisis. All people are not equally benefitted by macro type energy production. Micro energy system produces energy not in large scale, but meets the demand of each individual to some extent. He gave an insight to various Micro renewable energy systems like solar energy, wind power, hydrogen production etc. According to him, using hybrid power generating concepts in reality will give proper solution for a problem rather than using a single technology.

Second keynote address was on the topic “Changing cities – challenges to urban planning” by Dr. Padmavathi P.

She focused on the causes and consequences of urbanization. She told that deforestation, ozone layer depletion, and global warming are some of the major threats to environment due to urbanization. She added that Govt. of India has established schemes like JNNURN, Smart city mission, AMRUT for the development in India. The main consequences of urbanization were food problems, flooding, loss of bio diversity, decrease in agricultural land, climate change etc. She appealed to the emerging engineers to consider the environment prior to development.

After the inaugural and keynote sessions , academic sessions were started in the various departments as follows.

ESPACE - 2015

Department of Electronics and Communication Engineering

The Department of Electronics and Communication Engineering, Govt. Engineering College, Trichur organized its International Conference on the sub-theme 'Electronics, Signal Processing and Communication Engineering (E-SPACE 2015)' under the umbrella of ICETEST 2015 staring from 9 Dec 2015 to 11 Dec 2015. The conference aimed at bringing experts from academics, research, and industry in the fields of electronics, signal processing, and communication engineering to a common forum. The objective of this conference was to provide a platform for the innovative researchers to present their work, and to get assessed, motivated and guided by subject experts in the respective fields. There were 58 registrations for oral paper presentations distributed in various tracks.

Day – 1

E-SPACE 2015 was inaugurated by Dr. S. Radhakrishnan, Principal, Govt. Engg. College Srikrishnapuram. This was followed by his talk on the topic, "Key characteristics and technological challenges of future networks".

He briefly explained the evolution of wireless communication networks, 5G and wwww concepts. Characteristics of current 4G networks such as OFDM, MIMO, link adaptation technology etc. were explained. Some of the demands in future wireless communication networks were investigated. Pervasive networks, Group cooperative relay, cognitive radio networks etc. were introduced as a part of future 5g concepts. He also gave an introduction to Massive MIMO which utilizes hundreds of antennas in mm wave frequency.

There were twelve paper presentations and the presentations were conducted in two venues of Electronics Engineering Department.

Dr. S. Radhakrishnan, Principal, Govt. Engineering College, Sreekrishnapuram, Palakkad, Dr. Gopakumar A., Professor & HOD, MES College of Engineering, Kuttippuram, Dr. Varun P. Gopi, Assistant Professor, Department of E&C, Government Engg. College, Wayanad and Prof. Nandakumar P. Professor, NSS College of Engineering, Palakkad evaluated the presentations.

Day – 2

The second day of the conference started with an invited talk by Dr. Prasanta Kumar Ghosh, Assistant Professor, Dept. of Electrical Engineering, Indian Institute of Science, Bangalore. The title of the speech was, “Speech Production Research – Opportunities and Challenges”.

The talk focussed on recording of speech production process and the various methods used for the process. Speech production process consists of listening speech and seeing speech. The processes used for seeing speech are Ultrasound (which gives a one dimensional picture), Electropaletography, Xrays, Electromagnetic articulography (which records motion of the sensors placed on articulators with synchronized speech), Real time magnetic Resonance Imaging (MRI) (gives complete multidimensional view and has lower temporal resolution) etc. The talk also focussed on emotional speech

synthesis and emotion recognition. The talk revealed the inner complexities involved in speech production research to inspire researchers.

There were 26 paper presentations and the technical sessions were chaired by Dr. P. P. Deepthi, Associate Professor, Department of E&C, NIT, Calicut, Dr. Reena P. Professor, Department of E&C, GEC, Kozhikode, Dr. Renu Jose Assistant Professor, Department of E&C, RIT, Kottayam, Dr. Sreeni K.G. Assistant Professor,Dept.of Electronics& Communication Engg.,College of Engg, Trivandrum, Dr. A. R. Jayan Professor, Dept. of Electronics & Communication Engg.,GEC, Sreekrishnapuram and Dr. Deepa P. Gopinath Assistant Professor, Dept.of Electronics& Communication Engg.,College of Engg, Trivandrum.

Dr Indiradevi. Principal, GEC, Thrissur and Prof Nalini E S , GEC, Thrissur , gave away mementos to the guests.

Day – 3

Dr. Kunal Narayan Chaudhury , Assistant Professor , Department of Electrical Engineering , Indian Institute of Science delivered a lecture on the topic ‘ Sparse Models and Algorithms for Image Processing’

Abstract of the talk is as follows:

Most natural signals such as speech, audio, and images have sparse approximations. That is, they can be accurately described using a small number of coefficients in some appropriate basis, e.g., the Fourier or wavelet basis. This fact has classically been exploited for signal compression, namely to convert large image and video signals into substantially smaller formats (e.g., JPEG and H.264) without compromising the data fidelity. Over time, what became gradually evident is that sparsity had relevance and utility beyond just compression. In particular, it was realized that one could use sparsity (and allied notions) as models for signal processing. Powerful algorithms based on these models were proposed that led to state-of-the-art results in various signal processing applications. The goal of this talk is to provide a short introduction to various sparse models and algorithms that are now used in image processing.

There were 20 paper presentations including 2 on-line presentations.

The various sessions were chaired by Dr. Ajayan K.R. Associate Professor, Dept.of Electronics& Communication Engg., College of Engg, Trivandrum, Dr. Rekha K. James, Associate Professor, Dept.of Electronics & Communication Engg., School of Engineering, CUSAT, Dr. Binu Paul, Associate Professor, Dept. of Electronics & Communication Engg., School of Engineering, CUSAT , Prof Mohamed Salih, GEC, Thrissur, and Dr. A. R. Jayan Professor, Dept.of Electronics& Communication Engg., GEC, Sreekrishnapuram.