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**Proceeding of National Conference on  
Emerging Trends in Engineering Technology  
&  
Applied Research  
(NCETAR-17)**

**19<sup>th</sup> May 2017, M S Engineering College, Navarathna Agrahara,  
Bengaluru**



**Organized by**



**M.S.ENGINEERING COLLEGE**

Approved by AICTE, New Delhi  
Permanently affiliated to Visvesvaraya Technological University, Karnataka  
Accredited by NAAC and an ISO 9001:2008 Certified Institution

**About M. S. Engineering College**

M. S. Engineering College, promoted by M. S. Educational Trust is spread over an area of 25 acres and is located very close to the International Airport. M. S. Engineering College was set up in 2002 and, over a period of 15 years, has made a mark for itself in offering engineering courses both at the under graduate and post graduate level. The college is equipped with excellent infrastructure and accomplished team of faculty members and administrative staff. All programmes offered at MSEC are approved by the All India Council for Technical Education (AICTE), an apex body of the Government of India. The college is affiliated to Visvesvaraya Technological University (VTU), Karnataka. M. S. Engineering College is an ISO 9001:2008 Certified Technical Institution and Accredited by NAAC. The college has got excellent placement record.

**About R&D Centre:**

VTU approved R&D centre is setup at MSEC. The centre provides opportunity to research scholars to pursue research in the field of Electronics and communication Engg. Computer Science & Engg., Mechanical Engg., and Electrical Engg. R&D centre would encourage undergraduate students, post graduate students, research scholars and faculties to pursue research in their area of interest and participate in ongoing research activities @ MSEC. R&D centre would support the departments, students and faculties through research grants as well and will provide required infrastructure to carry out academic research. The outcome of the research carried out will lead to publications, patents and product development. Workshops, seminars and training programs will be organized every semester for the benefit of students and faculty members.

**About the Conference:**

The world is becoming increasingly complex, and to develop and grasp the opportunities ahead, we need to be better at looking at the world from a wider array of perspectives. NCETAR-17, a national level conference is organized with an objective to bring together researchers, practitioners and students from academia and industry to share their knowledge, experience and achievements. The conference shall serve as a forum for the dissemination of state-of-the-art research, development, implementations of the technologies and applications. The aims of NCETAR-2017 are to promote interdisciplinary research and development activities that can foster the growth of Engineering Technology providing solutions to societal needs. As organizers, we take care of the context and the story of how everything fits together and invite experts from around the country to share their unique perspectives and insights on emerging trends in their respective domains of research.

## FOREWARD



Emerging Trends in Engineering Technology and Applied Research have led to exponential growth of technology that aid the mankind in all walks of life including medical devices and treatments, domestic requirements, human resources and communications. On the other hand there is lots of research, innovation and use of

technology for development of products that are of societal relevance. Academic institutions encourage students and faculty members to work on emerging technologies and contribute to the growth of technology and knowledge. Conferences are the means that provide platform for sharing student's or faculty member's technical experiences and research contributions. I hope the 3<sup>rd</sup> National Conference organized at MSEC, Bangalore will provide the required platform for authors, researchers and scholars to present their work and share their valuable experiences.

I am delighted to know that the response to the conference was tremendous and the committee have put in lots of effort in short listing the best papers for presentation in the conference.

I am thankful to the authors especially the key note speakers, session chairs and other guests and a hearty welcome to everyone participating in this conference.

I also congratulate all Departments for taking this initiative in publishing this Book of Abstracts.

**Shri. Muniswamy Raju K.**

President- M S Educational Trust, Bangalore

## MESSAGE FROM THE SECRETARY



National Conference on Emerging Trends in Engineering Technology and Applied Research organized by MSEC, Bangalore is a bold attempt to bring out the talents of budding engineers and academicians those contributing to growth of technology.

Every research work undertaken is challenging and technically very advanced, thus increasing the healthy competition among students to exhibit their research skills. I am very happy to know that the 3<sup>rd</sup> National Conference organized by MSEC has attracted good number of papers across south India. The conference will truly provide an opportunity to authors to present their work carried out over last one year with feedback for improvement. The abstract proceeding published well in advance is also appreciated and management will also be able to encourage and support such initiatives.

I congratulate the entire MSEC team of faculty members in organizing the conference in interdisciplinary domain and also in bringing out this book of abstracts. The best papers selected from the conference will also be published in the International Journal of Engineering Research, IJOER. I also hope that the quality of the papers presented and their contributions will technically advance and can solve the common man's problems.

**Sudarshan M.**

Secretary

M. S. Educational Trust, Bangalore

## MESSAGE FROM THE PRINCIPAL



I take this opportunity to congratulate the editorial committee, R&D centre, Department HODs, Co-coordinators, authors and all participants for their effort in making this conference successful. I am extremely happy for the efforts taken up by the authors in taking up challenging work in interdisciplinary areas of research and completing them successfully.

Technological revolutions have led to emergence of new research areas that provides innumerable opportunities to academicians, students and researchers to apply technology in creating applications that are of societal relevance. Interdisciplinary research is always appreciated and encouraged; it will also require carrying out collaborative research. The 3<sup>rd</sup> National Conference organized by MSEC, Bangalore is one such platform that brings all of them under one umbrella sharing their experiences and technical strengths that would foster interdisciplinary and collaborative research.

We ensure that the book of abstracts will be circulated among professionals and industrialists so that the efforts taken by the authors are appreciated and an opportunity is provided for them.

I once again congratulate all the students and the faculty members in working towards conduction of the National Conference and publishing the abstract proceedings and wish them a grand success.

**Dr. Badarinarayan K. S.**

Principal

M. S. Engineering College, Bangalore

## FROM THE EDITOR'S DESK



Technological advances in the field of Engineering have encouraged interdisciplinary research activities among students and staff members in an academic setup. With industry venturing forward in supporting academic institutions in carrying out research work and project work on advanced technologies that are of societal relevance, academic community in India has equally progressed in line with industry requirements. Industry collaborations, International University collaborations and inter-department collaborations are seemingly drive students to learn new things and develop their technical skills. Paper publications being one of the platforms for students to express their research findings to the global audience, it is the responsibility of academic institutions to provide such platforms for students to exhibit their technical expertise. Many of the journals publish papers of high technical quality and equally charge for publications, many a times students may not be able to pay the publication charges. On the other hand, fees less publications in reputed journals have waiting period of more than 6 months. Open access journals also provide opportunity to scholars to publish their research work. Very few open access journals are peer reviewed and maintain high quality but many others lack it.

The primary objective of this conference is to enable students to submit their research findings that have been undertaken with interdisciplinary approach. The best papers presented will be short listed and published in the International Journal of Engineering Research and M S Journal of Engineering Technology and Research.

I take this opportunity to thank the management in extending their valuable support and encouragement in conducting this conference and publishing the abstract proceedings. I also thank all the authors those who have contributed for the book and HODs/faculty members in extending their support in making this conference successful.

**Dr. Cyril Prasanna Raj P.**  
Dean (R&D)



## FROM THE EDITOR'S DESK



The world is becoming increasingly complex, and to develop and grasp the opportunities ahead, we need to be better at looking at the world from a wider array of perspectives. NCETAR-17, a national level conference is organized with an objective to bring together researchers, practitioners and students from academia and industry to share their knowledge, experience and achievements. The conference shall serve as a forum for the dissemination of state-of-the-art research, development, implementations of the technologies and applications. The aims of NCETAR-2017 are to promote interdisciplinary research and development activities that can foster the growth of Engineering and Technology providing solutions to societal needs. As organizers, we take care of the context and the story of how everything fits together and invite experts from around the country to share their unique perspectives and insights on emerging trends in their respective domains of research. The Conference is for Undergraduate and Post Graduate Students, Faculties, Researchers and Practicing Engineers with a basic knowledge in design, modeling, fabrication, packaging, material handling etc. Representatives from EC/TC/CS/EE/ME and Civil Engineering background are invited to present the papers. More than 200 papers across different disciplines have been received. The technical review committee has reviewed the papers and have recommended around 135 papers based on the technical contributions to be presented in the conference. The papers presented are further reviewed by session's chairs and the best papers are shortlisted and awarded.

I am thankful to the Management, Principal, Dean (R&D), HODs and all faculty members in extending their support and encouragement in successfully conducting the conference. We also thank the authors for taking part in this conference and wish them best of luck.

**Dr. Rehna V. J.**  
**Professor & Head (ECE)**

## MESSAGE FROM THE CONVENER



It is indeed a great pleasure to write this message by quoting the word of Jean Baudrillard (was a French sociologist, philosopher) who offers a distinction between change and becoming that informs the discussion of technology and educational change: He said, *“We are changing our system of values, changing all our identities, our partners, our illusions, and so on. We are obliged to change, but changing is something other than becoming, they are different things. We are in a “changing” time, where it is the moral law of all individuals, but changing is not becoming. We can change everything, we can change ourselves, but in this time we don’t become anything. We are in a chameleonesque era, able to change but not able to become”*.

This quote gets to the core problem in changing schools, colleges, universities, or corporate training. Organizations recognize that they are facing tremendous change pressures and are grasping for clarity on what they are becoming (or will become). I am sure, that the 3<sup>rd</sup> National Conference NCETAR-17, where in Students, Faculty from Academia, Experts from Industry and Research Scholars are invited under one roof, will provide a common platform for exchange of ideas and promote interdisciplinary Engineering research activities in the field of “Science & Technology”.

My best wishes to the participants of the NCETAR-17. I appeal them to take part in the conference, have a fruitful discussion and come out with revolutionary ideas to bring advancement in Science & Technology. My hearty wishes to the members of the organizing committee of the 3<sup>rd</sup> National Conference. I show my gratitude towards the Patron, Chairman, Organizers, Technical Committee members and participants of the conference and wish for good success!

I wish this conference to become a milestone on the way to such a dialogue which implies that we have to continue our efforts in this respect in the years to come.

**Dr. Rajesh S. L.**  
**Professor & Head (CSE)**



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## KEYNOTE SPEAKER – PROFILE



The Keynote Speaker of the National Conference on Emerging Trends in Engineering Technology and Applied Research, NCETAR – 17 is Mr. Ashok Gopinath, Managing Director (Technology), Financial Services Solution Architecture, Accenture. He has 19+ years of experience in Financial Services Technology across the globe. His business focus is in the areas of Wealth Management, Investment Banking, Online Brokerage and Retail Banking and domain focus is on Risk & Compliance including KYC, FATCA, Fraud Detection & Surveillance, Real time Activity monitoring, Automated Customer Onboarding and reconciliation. His technology focus is on Big Data, Distributed Data Stores, High Availability Systems, Cloud Computing, Golden Source of Data, High Volume Transaction Systems. He has successfully led large cross functional teams spread across geographies & time zones. He has successful connects at CxO levels in all engagements.

Mr. Ashok Gopinath is the Managing Director at Accenture since August 2013 and had been the Industry Principal & Head Financial Services Products & Platforms earlier. He head the entire group with focus on building out core Business & Technology Platforms to meet the next generation needs of the Financial Services Sector. He is responsible for all stages of the Product Life cycle and an aggressive promoter of the Co-Creation Model of Business Platform engineering. He is experienced with high performance & high availability systems in the areas of Real Time Fraud Surveillance, Trading, Money Movements leveraging cutting edge technologies like Cloud Computing, Parallel Processing and Enterprise Mobility Platforms. His critical success factors have been a thorough understanding of the Capital Markets, Banking & Wealth Management Industries in combination with a wealth of Global Engineering expertise spread across the US, Europe, Middle East and the APAC regions.

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