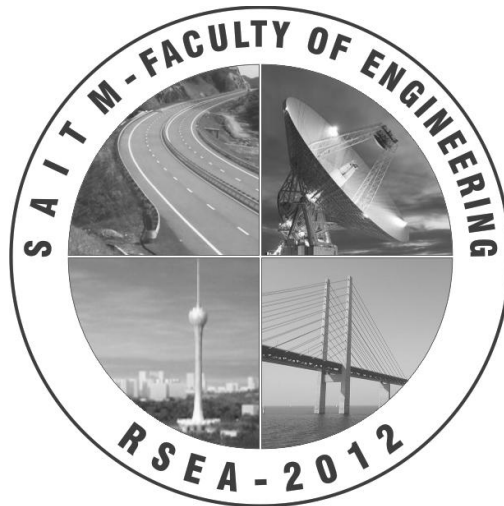


Proceedings of the SAIMT Research Symposium on

Engineering Advancements

SAITM – RSEA 2012

27th & 28th April, 2012



Faculty of Engineering

South Asian Institute of Technology and Medicine [SAITM]

P. O. Box 11, Millennium Drive,
Off Chandrika Kumaratunga Mawatha,
Malabe, Sri Lanka.

Major Topics:

- | | |
|---|----------------------------------|
| 1. Computer Science and ICT | 6. Structural and Transportation |
| 2. Electrical, Electronics and Communications | 7. Town Planning |
| 3. Mechatronics and Automation | 8. Urban Management |
| 4. Water and Environment | 9. Technology Based Education |
| 5. Geotechnical and Soil Mechanics | 10. Project Management |

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Message from the Chairman

Prof. Neville Fernando

MBBS (Ceylon)
President / Chairman
South Asian Institute of Technology and Medicine [SAITM]



SAITM Research Symposium on Engineering Advancements (RSEA) is the second such event organized by SAIMT Faculty of Engineering since its inception in 2009. Following the highly successful inaugural Research symposium in May 2011, it is indeed an achievement to continue the event as an annual fixture where students, staff and the general engineering research community in Sri Lanka benefit.

Notwithstanding a relatively short history of its existence, SAIMT Faculty of Engineering has grown into a remarkable strength both in student numbers as well as by boldly venturing into many areas where only the state universities in Sri Lanka have hitherto dominated, thus establishing a firm leadership as a high quality engineering education provider, at the tertiary level, among the non state sector higher education institutes.

Partnered by the Asian Institute of Technology (AIT), Thailand, SAIMT Faculty of Engineering has thus provided immense opportunities for its students and the engineering community in Sri Lanka, a forum where advancement of engineering can blossom. Just as the inaugural RSEA has spurred our students to venture into research work to achieve higher goals, I am confident; this year's event will establish the annual SAIMT RSEA as a beginning of a rich tradition.

Message from the Dean, Faculty of Engineering

Dr. Sisuru Sendanayake

BSc. Eng (Hons), MSc, PhD (Moratuwa)
Dean, Faculty of Engineering
South Asian Institute of Technology and Medicine [SAITM]



It is with great pleasure that we announce the organizing of the 2012 version of SAITM Research Symposium on Engineering Advancements (SAITM RSEA 2012) scheduled for 27th and 28th of April 2012. This volume of proceedings of SAITM RSEA 2012 contains the research papers that are presented on 27th and 28th of April along with extended abstracts and keynote speeches. All the research papers of this volume have been peer reviewed. The editors are very much grateful to the authors for contributing research papers of high quality. We also acknowledge the financial sponsorship provided by many organizations that has been extremely helpful for organizing a successful research symposium.

We are pleased to acknowledge the advice and assistance provided by the members of the Industry Advisory Committee along with many others who volunteered to assist to make this very significant event a success. It is the earnest wish of the editors that this volume of proceedings would serve a very useful service with the research community directly or indirectly involved in the studies related to engineering advancements.

Message from the Editor

Dr. N. P. Miguntanna

BSc. Eng(Hons)(Peradeniya), PhD (Queensland University of Technology (QUT), Australia)
The Editor, SAITM – RSEA 2012
South Asian Institute of Technology and Medicine [SAITM]



I warmly welcome you all to the “SAITM- Second Annual Research Symposium on Engineering Advancements – RSEA 2012”.

Even though the world is experienced with immense science and technological development countless number of failures in all the sectors ranging from the design and construction of infrastructure to information technology and telecommunication are evident today. This is mainly caused by incorrect understanding of knowledge sharing, lack of awareness and the limited accuracy in transferability of knowledge to the actual environment. We recognize that active involvement in research, publication and collaboration and partnerships with the industry can significantly overcome these issues.

RSEA 2012 is designed to bring together the university students, researchers, scientists and industrialists to an open and interactive forum where they can discuss and share knowledge on technological and scientific challenges, practical barriers, theoretical developments and their applications and limitations in order to bring a sustainable development. RSEA 2012 opens the platform to cover number of topics which include Computer Science and ICT, Electrical, Electronics, and Communications, Mechatronics and Automation, Civil Engineering and Project Management.

In order to ensure the overall quality of the proceedings each submission was subjected to a minimum of one peer review by an expert in the field as a part of a double blind review process. In addition, you will be listening to two inspiring keynote addresses by two outstanding personnel from the academia, Prof. Chintha Jayasinghe, Director of Postgraduate Studies, University of Moratuwa, Sri Lanka and Prof. Matthew Dailey, School of Engineering and Technology, Asian Institute of Technology in Bangkok, Thailand.

My sincere wish is that RSEA will grow from strength to strength in years to come and continue to address the real world engineering challenges. I am looking forward to meeting you at the SAITM Research Symposium on Engineering Advancements – 2012.

I also take this opportunity to convey my sincere thank to Prof. Lanaka Udawatta, the founder of this esteemed event as well as the editor of the RSEA 2011 proceedings for his dedicated efforts in making the RSEA 2011 to a success.

SAITM RSEA 2012 - Programme Committee

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- **Eng. W. G. C. W. Kumara**
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