

FIT 2016 Preface

After decades of slowly expanding behind the scenes, information technology has suddenly exploded into public view and has become an inseparable part of our daily life. It is like a huge wave that has been building offshore, only to become noticeable as it crests and then breaks on the beach. At the moment, we are all caught in the boiling surf of this breaking wave. The stories in the media on such topics as the information superhighway, multimedia, or the Internet have been realized. These aspects of information technology have rapidly affected the way we work, live, and play and we will never be the same.

Information technology has changed not only individual lives, but societies are emerging to be built on technology, knowledge and intelligence. The free flow of information empowers people as it is transformed into knowledge and ultimately to intelligence. Appropriate use of knowledge contributes to raising the quality of life. Advances in theoretical understanding of information technologies and their widespread development and implementations are causing transformations in areas as diverse as education, research, healthcare, science, entertainment, government, international trade, education, commerce and many others. Technological advancements in processing, storage, transmission, and sharing of information are taking place at an unprecedented pace. Access to updated information, without spatial or temporal constraints, has made information an economic resource that is structuring and shaping today's society.

From a business perspective, information technology has created new ways of doing business. Globalization, demographic change and the growing influence of online trade are reshaping our world at breathtaking speed. The galvanizing world economy based on digitally empowered enterprises and people is giving rise to a new set of critical success factors for competition and even for survival in the global marketplace. Information has become an important source as well as an ingredient for projecting economic advancement. It is a touchstone issue for entrepreneurs to utilize information as a key factor of production. Together, these forces are having a synergetic influence on governments to restructure their mandates to remain transparent and relevant in a competitive world.

Pursuing exploration of new frontiers in information technology research bestows us with new dimensions in wisdom and brings forth promise, which steers change, involves risks, ensures transparency and offers higher returns. The future will belong to those individuals, organizations, and nations who are able to capitalize on the revolutionary, rapid, and sustained efforts in the processing and shaping of information in order to generate knowledge to increase their growth.

Envisaging its importance and fostering vision towards achieving the objectives information technology affords us in different contexts, a three-day conference on Frontiers of Information Technology was organized by the COMSATS Institute of Information Technology (CIIT) on December 19–21, 2016, at the Serena Hotel, Islamabad. FIT 2016 is the 14th in the series since the conference's inception in 2003. The conference was conducted in collaboration with the Higher Education Commission of Pakistan (HEC) and the National Testing Service (NTS), and was technically cosponsored by IEEE, IEEE Computer Society's Technical Committee on Scalable Computing and Green Computing, and IEEE Industrial Electronics Society.

It gave us immense pleasure to introduce this collection of papers presented at FIT 2016. The event brought together several experts, researchers and scientists from around the world to share their research and development experiences in the field of information technology with a select gathering of intelligences, policy planners, analysts, academicians, industry professionals and a fairly diverse representation from other members of civil society. The conference centered on identifying and

expressing with clarity and effectiveness the research and development challenges and agenda in information technology. Technical papers presented in the conference were from the following tracks:

- Modeling, Simulation and Application of Emergent Technologies
- Signal Processing and Communications
- Smart Grid and Electronics
- Web, Application Development & Data Mining
- Image Processing, Computer Vision & Pattern Recognition
- Computer and Communication Networks and Cloud Computing
- Software Engineering

FIT 2016 had 330 research papers submitted, of which 74 papers were accepted, yielding an acceptance rate of 22%. In addition to technical papers, tutorials and a PhD symposium were also part of the conference program.

We are thankful to all those who submitted papers for consideration. As a result of the strict evaluation process, many papers fell short of the selection criteria and we would like to encourage those authors to submit them to next year's FIT conference. We are also very grateful to those colleagues and organizations that helped us in organizing the conference. In particular, we would like to thank the members of the FIT 2016 Program Committee, which we hope will offer their help again in organizing next year's conference. We would also like to thank the Higher Education Commission (HEC), National Testing Service (NTS), and COMSATS IIT administration for managing all aspects of the conference.

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