



Opportunities and Challenges in Information Communications Technology

Abstract

This talk introduces the overall trends of Information Communications Technology (ICT) and presents an overview for opportunities and challenges in ICT. Critical issues, research problems and developments of ICT in various areas are addressed, such as green computing, Internet computing, mobile computing, and intelligent computing. Opportunities and challenges in relevant areas are also covered, for example, Internet of Things, cloud computing, big data analytics. Critical development of ICT in various aspects are proposed thereafter. Finally, the challenges faced by the higher education sector are also discussed.

Keywords

Green computing, Internet computing, mobile computing, intelligent computing, Internet of Things, cloud computing

About the speaker

Steven Guan received his BSc. from Tsinghua University (1979) and M.Sc. (1987) & Ph.D. (1989) from the University of North Carolina at Chapel Hill. He is currently a Professor and the Director for Research Institute of Big Data Analytics at Xi'an Jiaotong-Liverpool University (XJTLU). He served the head of department position at XJTLU for 4.5 years, creating the department from scratch and now in shape. Before joining XJTLU, he was a tenured professor and chair in intelligent systems at Brunel University, UK.

Prof. Guan has worked in a prestigious R&D organization for several years, serving as a design engineer, project leader, and department manager. After leaving the industry, he joined the academia for three and half years. He served as deputy director for the Computing Center and the chairman for the Department of Information & Communication Technology. Later he joined the Electrical & Computer Engineering Department at National University of Singapore as an associate professor for 8 years.

Prof. Guan's research interests include: machine learning, computational intelligence, big data analytics, mobile commerce, modeling, networking, personalization, security, coding theory, and pseudorandom number generation. He has published extensively in these areas, with 130+ journal papers and 180+ book chapters or conference papers. He has chaired, delivered keynote speech for 80+ international conferences and served in 180+ international conference committees and 20+ editorial boards. There are quite a few inventions from Prof. Guan including Generalized Minimum Distance Decoding for Majority Logic Decodable Codes, Prioritized Petri Nets, Self-Modifiable Color Petri Nets, Dynamic Petri Net Model for Iterative and Interactive Distributed Multimedia Presentation, Incremental Feature Learning, Ordered Incremental Input/Output Feature Learning, Input/Output Space Partitioning for Machine Learning, Recursive Supervised Learning, Reduced Pattern Training using Pattern Distributor, Contribution Based Feature Selection, Incremental Genetic Algorithms, Incremental Multi-Objective Genetic Algorithms, Decremental Multi-objective Optimization, Multi-objective Optimization with Objective Replacement, Incremental Hyperplane Partitioning for Classification, Incremental Hyper-sphere Partitioning for Classification, Controllable Cellular Automata for Pseudorandom Number Generation, Self Programmable Cellular Automata, Configurable Cellular Automata, Layered Cellular Automata, Transformation Sequencing of Cellular Automata for Pseudorandom Number Generation, Open Communication with Self-Modifying Protocols, etc.