Keynote I

Different Facets of Forensics and Security in Document Analysis

Jean-Marc Ogier
Professor Université de La Rochelle

Abstract
Document engineering is the area of knowledge concerned with principles, tools and processes that improve our ability to create, manage, store, compact, access, protect and maintain documents. The fields of document recognition and retrieval have grown rapidly in recent years. Such development has been fueled by the emergence of new application areas such as forensics for document examination. Indeed, the explosion of the digital contents production and manipulation tools offers a lot of opportunities for criminal organisations to create, violate, steal, fraud digital documents, in the context of intellectual property protection, privacy protection, military application, …This talk will address some recent developments in the area of Document forensics and security, and will give an overview of our developments in terms of watermarking, automatic fraud and forgery detection (based on graphic and semantic analysis), and semantic hashing technique.

Speaker’s Bio
Jean-Marc Ogier received his PhD degree in computer science from the University of Rouen, France, in 1994. During this period (1991-1994), he worked on graphic recognition for Matra Ms&I Company. From 1994 to 2000, he was an associate professor at the University of Rennes 1 during a first period (1994-1998) and at the University of Rouen from 1998 to 2001. Now full professor at the university of La Rochelle, Pr Ogier is the head of URL laboratory which gathers more than 120 members and works mainly of Document Analysis and Content Management. Author of more than 200 publications / communications, he managed several French and European projects dealing with historical document analysis, either with public institutions, or with private companies. Pr Ogier is a Deputy Director of the GDR I3 of the French National Research Centre (CNRS). He is also Chair of the Technical Committee 10 (Graphic Recognition) of the International Association for Pattern Recognition (IAPR), and is the representative member of France at the governing board of the IAPR. At last he is also Vice rector of the university of La Rochelle.
Abstract
Since recent advancement of computing and robotics technologies, intelligent robots are soon ready to serve us in our homes, hospitals, offices and everywhere. To be used by general public who has no special training, these robots should be able to speak, recognise facial expression, understand spoken and gesture instructions, navigate autonomously in human-centred environments, and therefore play an important role in our daily life. This seminar briefly overviews the recent development in advanced human-machine interaction, in particular focused on the various modalities of information exchanging between humans and robots. Several human-machine interaction mechanisms are discussed respectively, and many experimental implementation results are demonstrated via video.

Speaker’s Bio
Huosheng Hu is a Professor in the School of Computer Science & Electronic Engineering at the University of Essex, leading the Robotics Group. His research interests include behaviour-based robotics, human-robot interaction, service robots, embedded systems, learning algorithms, mechatronics, and pervasive computing. He has published over 430 papers in journals, books and conferences in these areas, and received a number of best paper awards. Prof. Hu is a Fellow of Institute of Engineering & Technology, a Fellow of Institute of Measurement & Control, a senior member of IEEE and ACM, a founding member of IEEE Robotics & Automation Society Technical committee on Networked Robots. He has been a Program Chair or a member of Advisory/Organising Committee for many international conferences such as IEEE ICRA, IROS, ICMA, ROBIO, ICIA, and IASTED RA and CA conferences. Currently, He is Editor-in-Chief for International Journal of Automation and Computing, Founding Editor-in-Chief for Online Robotics Journal and an Executive Editor of International Journal of Mechatronics and Automation.
Keynote III

Issues Relating to the Practical Exploitation of ICmetric Security Technology

Dr Gareth Howells
Reader in Secure Electronic Systems
University of Kent

Abstract
The digital revolution has transformed the way we create, destroy, share, process and manage information, bringing many benefits in its wake with an ever increasing number of embedded consumer and communication devices at the heart of this revolution. However, such technology has also increased the opportunities for fraud and other related crimes to be committed. Therefore, as the adoption of such technologies expands, it becomes vital to ensure the integrity and authenticity of electronic digital systems and to manage, control access to and verify their identity. ICmetrics represents an exciting new approach for generating unique identifiers for embedded electronic devices and online services based on their determinable operating characteristics enabling secure encrypted communication between devices potentially significantly reducing both fraudulent activity such as eavesdropping and device cloning. This talk introduces the technical challenges associated with ICmetric technology and explores some of the practical considerations associated with its successful commercial exploitation.

Speaker’s Bio
Dr. Gareth Howells is a Reader in Secure Electronic Systems at the University of Kent and Founder and Director of Metrac Ltd, a joint spin-out company of the Universities of Kent and Essex exploiting novel ICmetric based security technology. He has been involved in research relating to security, biometrics and pattern classification techniques for over twenty five years and he has been awarded, either individually or jointly, several major research grants relating to the pattern classification and security fields, publishing over 150 papers in the technical literature. Recent work has been directed towards the development of secure device authentication systems which has received significant funding from the UK Technology Strategy Board and is currently in the process of being commercially exploited.
Abstract
This talk will outline the challenges of embedded computing for safety critical systems. Recent and on-going research work aimed at improving the reliability and high-performance computing capability of embedded systems in aerospace and autonomous sensing applications will be presented. In particular, the following projects will be outlined: (i) A new approach to fault-tolerant distributed computing on board satellites. (ii) Mitigation techniques for reconfigurable programmable logic devices against radiation effects on board satellites. (iii) Advances in on-board hyperspectral compression. (iv) Multi-sensor data fusion techniques targeted at wireless sensor networks for planetary exploration and landmine clearance.

Speaker’s Bio
Prof. Tanya Vladimirova is Chair in Engineering, an Director of Industrial Liaison and Careers at University of Leicester, UK. Previously, she was with the University of Surrey, also a senior member of the Surrey Space Centre, where she founded and led the Microelectronics Design and Embedded Systems research group. She has been involved in a large number of research projects concerned with integrated circuit design (FPGAs and ASICs), reconfigurable computing, wireless sensor networks, distributed processing, computational intelligence techniques and image processing for use on board satellites. She authored over 160 papers, is Associate Editor for IEEE Transactions on Aerospace and Electronic Systems, also has served as Associate Editor for the Journal of Spacecraft and Rockets of the American Institute of Aeronautics and Astronautics (AIAA).