Foreword

Welcome to the sixth edition of the International Conference on Multimedia Computing and Systems (ICMCS’18)!

ICMCS’18 consolidates the position of this international conference among world class IEEE conferences covering topics and issues related with multimedia technologies and applications, which are reshaping modern societies at different levels and areas as diverse as medicine, education, agriculture, industry, and entertainment.

The former editions of this International Conference, namely, ICMCS’09, ICMCS’11, ICMCS’12, ICMCS’14, and ICMCS’16 took place respectively in Ouarzazate, Morocco in April 2-4, 2009 and April 7-9, 2011, in Tangiers, Morocco in May 10-12, 2012, and in Marrakech in April 14-16, 2014 and September 29 - October 1st, 2016 and were very successful at all levels. The most important sign of this success is the fact that this conference was among very few international conferences to be indexed by Thomson Reuters starting from the former edition. Furthermore, this success was a very good incentive for us to keep on this conference and to organize this edition (ICMCS’18) in Rabat, the Capital of Morocco, in an effort to confirm it as a regular appointment for scientists and engineers, from academia, industry and government, and for graduate students, where they can expose their research findings and also to get exposed to the latest research findings and cutting-edge Multimedia technologies.

As was the case with the former editions, ICMCS’18 gathers in Rabat outstanding researchers, developers, and practitioners from academia, industry and government working in different fields related with all facets of multimedia theories, applications and technologies together with the scholars and students coming from the five continents to share their research findings in relation with the topics covered. Hence, ICMCS’18 is providing an excellent networking opportunity and environment for all these stakeholders and participants to present and discuss their research findings and to start new friendship relationships and collaborations. ICMCS’18 also serves as a forum for the dissemination of the state-of-the-art research, development, and innovation of multimedia systems, technologies, and applications through the very rich and diversified technical program.

All the editions of this conference, including this one, are co-technically sponsored by IEEE and their proceedings are published in its Xplore digital library.

Last but not least, we wish all ICMCS’18 participants a very enjoyable and fruitful stay in Rabat.

Mohamed Essaaidi  
National Higher School of IT (ENSIAS),  
Director  
Rabat, Morocco

Youssef Zaz  
President of MSTI  
Abdelmalek Essaadi University, Asso. Prof.  
Faculty Sciences, Tetouan, Morocco

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Otman EL Mrabet, Faculty of Science, Tetouan (Morocco)

Publication Chair
Abdelaazziz El Hibaoui, Faculty of Science, Tetouan (Morocco)

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Imran Ahmad, University of Windsor (Canada)
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Hafsa Benaboud, FS, Rabat University (Morocco)
Ahmed Bendahmane, Abdelmalek Essaadi University (Morocco)
Driss Benhaddou, University of Houston (USA)
Rachid Benlamri, Lakehead University, Ontario (Canada)
Miguel Beruete, Universidad Pública de Navarra (Spain)
Nizar Bouguila, Concordia University (Canada)
Seddik Bri, EST, Meknes University (Morocco)
Noureddine Chabini, Royal Military College (Canada)
Larabi Chaker, XLIM-SIC – University of Poitiers (France)
Chin-Chih Chang, Chung Hua University (Taiwan)
Mouloud Challal, University of Boumerdes, Boumerdes (Algeria)
Mohamed Chrayah, ENSA Tetouan (Morocco)
Joyati Deb Nath, Winona State University (USA)
Noureddine Djedi, LESIA-Biskra University (Algeria)
Claude Duvallet, Le Havre University (France)
Abdelaazziz El Hibaoui, FS Tetouan (Morocco)
Youssef El Mera et, Faculté de Science, Kenitra (Morocco)
Abdennour El Rhali bi, John Moores University – Liverpool (UK)
Hosam El-Ocla, Lakehead University, Ontario (Canada)
Abdelhafid Elouardi, IEF-Univ of Paris XI (France)
Francisco Falcone, Universidad Publica de Navarra (Spain)
Cherif Foudil, University of Biskra (Algeria)
Mostafa Hefnawi, RMC-Kingston, Ontario (Canada)
Fortino Giancarlo, Università della Calabria (Italy)
Christos Grecos, University of West of Scotland (UK)
William Grosky, Univ of Michigan (USA)
Arash Habibi Lashkari, University of New Brunswick (Canada)
El Abed Haikal, Technische Universitaet Braunschweig (Germany)
Yaser Jararweh, University of Science and Technology (Jordan)
Okba Kazar, Biskra University (Algeria)
Ismail Khalil, Johannes Kepler University of Linz (Austria)
Antonio Liotta, Eindhoven University of Technology (Netherlands)
Pascal Lorenz, University of Haute Alsace (France)
Teddy Mantoro, Universitas Siswa Bangsa International (Malaysia)
Philippe Marthon, IRIT - Toulouse University (France)
Lotfi Osman, University of Carthage (Tunisia)
Mohamed Nemiche, FS Agadir (Morocco)
Hassan Qjidaa, FS- Fez University (Morocco)
Angela Carrillo Ramos, Pontificia Universidad Javeriana (Colombia)
Rachid Saadane, LETI-EHTP, Casablanca (Morocco)
Imad Saleh, Paragraphe, Paris 8 University (France)
Gerald Schaefer, Loughborough University (UK)
Sahbi Sidhom, LORIA, Lorraine University, Nancy (France)
Luay H. Tahat, Gulf University for Science and technology (Kuwait)
Abdelouahed Tajer, ENSA, Marrakech (Morocco)
Sundarapandian Vaidyanathan, Vel Tech (India)
Hayato Yamana, Waseda University (Japan)
Access to ICMCS’18 Venue

Dawliz Resort & Spa (5* Hotel)
Avenue du Prince Héritier, Bouregreg - Rabat, Morocco

Rabat Airport <-> ICMCS’18 Venue
7.9 km  13 min

The nearest Railway Station
(Gare de Salé)
1.3 km  4 min

The nearest Tramway Station
(Station Bab Lamrissa)
0.8 km  11 min
**Presentation guidelines:**

- All presentations **should be in English**.
- The time provided for oral presentations is 15 min (10 min for the presentation and 5 min for discussion).
- The speakers should give their slides to the session chair before the beginning of each session.
- For poster presentations, posters should be displayed, at least, one hour before the beginning of posters session and any explanation required should be provided to session chairs and visitors.

Apply online for Radio Amateur Tutorial:

http://www.med-space.org/icmcs18/register-tutorial/

Register online:

(Free for ICMCS’18 registered participants, 2000 MAD/ 180 Euro for others)

http://www.med-space.org/registration-form-ICMCS.html

One paid registration is sufficient to attend all Workshops, Tutorial, and keynote talks. Includes lunches of May 10 and 11, 2018.
## Program Overview

### Topics

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Multimedia file systems and databases  
Audio, image, and video analysis  
Pattern recognition, Computer Vision, and medical applications |
| **S-II** | Internet and Web-Based Systems  
E-learning, e-gov, and e-commerce  
Localization and tracking  
Systems and Networks security  
Wireless network algorithms and protocols  
Multi-agent systems |
| **S-III - MACS** | Modern Antennas and Communication Systems |
| **S-IV - IoT** | Internet of Things Workshop  
Cloud computing |

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### Social Event
- Exotic Garden of Bouknadel
- Mausoleum of Mohammed V  
& Hassan Tower
- Kasbah of Oudaya
- Bourguiba Marina
### Keynote talks

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<td>Semantic Interoperability Challenges for Healthcare Big Data</td>
<td>Prof. Rachid Benlamri, Lakehead University, Ontario, Canada.</td>
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### Tutorials

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<td>Tuto2</td>
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<td>Auditorium</td>
<td>Basics of Deep Learning for Vision, Robotics, and Autonomous Vehicles</td>
<td>Frank Domoney, Director at Glencroft Ltd, Lavenham, Suffolk, UK</td>
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The present landscape of healthcare is one of escalating costs coupled with an aging population with increasing complexity in concurrent chronic medical illnesses. Care provisioned to these patients relies on data from different sources, such as archives of medical history records, laboratory test results, diagnostic images, prescribed medication, and data from monitoring equipment and wearables. This enormous amount of heterogeneous complex medical data is currently stored and treated by most healthcare organizations in isolation. However, Semantic Web technologies and big data tools have the potential to create significant value by improving outcomes of personalized, predictive and preventive medicine while lowering costs. This presents an urgent need for solving data semantic interoperability issues, which are crucial towards developing novel ways to expose, structure, and exchange healthcare information. Also, this will allow for developing new, scalable and expandable big data infrastructure and analytical methods that can enable healthcare providers access and exchange knowledge in a timely manner, thus providing better outcomes. This talk addresses the above-mentioned challenges by discussing the role of Semantic Web and data analysis for generating high quality actionable data that makes big data robust. Also, we will discuss some of the technical challenges in using big data and the need for a semantic data-driven infrastructure based on ontology design, EHR standards, clinical pathway automation, and machine learning to address them.

Rachid Benlamri is a Professor of Software Engineering at the Faculty of Engineering at Lakehead University, Canada. He obtained his Master and PhD from the University of Manchester – UK. Professor Benlamri is the head of the Semantic Web and Mobile Computing Lab at Lakehead University. His research interests are in the area of Semantic Web, Data Science, Ubiquitous Computing and Mobile Knowledge Management. His research is funded by many institutions, such as the Natural Sciences and Engineering Research Council of Canada, Ontario Center of Excellence, Academic Health Science Centers of Ontario, and the Ontario Partnership for Innovations and Commercialization. He supervised over 80 students and postdoctoral fellows. He served as keynote speaker, and general chair for many international conferences. Professor Benlamri is a member of the editorial board for many international journals, such as the International Journal of Mobile Communications, the International Journal of Emerging Technologies in Web Intelligence, and the International Journal of Business Data Communications and Networking. He has authored/co-authored six books and over 100 papers in refereed journals and conference proceedings.

Data storage and processing needs of modern online services, such as social networks, online shopping, data analytics and visualization, have necessitated new kind of storage systems, called NoSQL systems. Such systems are generally deployed across a number of cloud computing nodes in order to store and process big data — a data of high order of magnitude, which is characterized by various properties such as Volume, Variety and Velocity or the 3Vs model. NoSQL systems use new techniques that support parallel processing and replication of data across multiple cloud computing nodes in order to provide high efficiency and availability of data. They have increasingly been used in large scale applications (such as online social media, online reviews, data analytics, etc.) that need high availability and efficiency but they lack support for ensuring stronger data consistency. This talk will explore research issues related to NoSQL systems and big data. It will also present new methods and models which are developed for incorporating transactional services in NoSQL systems in order to ensure stronger data consistency.

Dr. Muhammad Younas is a Senior Lecturer in Computing at the School of Engineering, Computing and Mathematics of Oxford Brookes University, Oxford, UK. He has obtained PhD in Computer Science from the University of Sheffield, UK. He has significant experience of research in the areas of cloud computing, big data, web technologies, and services computing. He has published more than 170 papers in international journals, conferences, workshops and books. His work is published and/or cited in top ranked Computer Science journals and conferences such as IEEE Transactions on Industrial Electronics; IEEE Computer; Data and Knowledge Engineering; ACM SIGIR; IEEE ICWS; IEEE Cloud; IEEE Transactions on Knowledge and Data Engineering; ACM Transactions on Information Systems; IEEE Transactions on Computers; ACM SIGMOD International Conference on Management of data; Proceedings of the VLDB Endowment; IEEE International Conference on Data Engineering; and others. He has also delivered keynote talks at various international conferences and symposia. He is also on the reviewers’ panel of international funding councils such as Engineering and Physical Sciences Research Council, UK, Agence Nationale de la Recherche, France, The Royal Society, UK, and the Natural Sciences and Engineering Research Council, Canada. He is on the editorial board of various international journals. He has served as a chair of highly reputed international conferences such as IEEE ICWS, IEEE SCC, IEEE AINA, IEEE FiCloud, and IEEE BigDataService among others. He has also served on a large number of technical program committees of international conferences. He is the member of IEEE Computer Society, IEEE Technical Committee on the Internet, IEEE Systems, Man, and Cybernetics Society, and IEEE Technical Committee on Services Computing.
KN03 - Dr. Mostafa Hefnawi,
Royal Military College, Kingston-Canada
Millimeter-Wave Massive MIMO for 5G
May 10 (Auditorium) – 12:00 - 12:45

Several enabling technologies are being explored for the fifth-generation (5G) wireless systems and it is widely recognized that the amalgam of massive multiple-input-multiple-output (massive MIMO) and millimeter-wave (mmWave) bands (> 30 GHz) will be a key enabler. On one hand, mmWave bands are used to take advantage of their wider bandwidth. On the other hand, massive MIMO technologies will mitigate the severe propagation loss in the mmWave bands. Another advantage of operating massive MIMO at mmWave frequencies is that large-scale antenna arrays can be packed into small dimensions due to the very small wavelength. However, with large-scale MIMO, the conventional fully-digital beamforming schemes that requires one dedicated RF chain per antenna element imposes a large hardware complexity and power consumption to the system and becomes impractical. This has motivated research on hybrid beamforming as a practical solution that uses a combination of analog beamformers in the RF and digital beamformers in the baseband domains, with fewer RF chains than the number of transmit elements.

The talk will provide an overview of massive MIMO and their application in next-generation wireless systems such as heterogenous networks (cognitive small-cells, wireless backhauls) and will highlight various hybrid beamforming architectures.

Dr. Hefnawi is currently a professor and the Chair of Graduate Studies Committee at the Department of Electrical and Computer Engineering (ECE), Royal Military College of Canada (RMC). Dr. Hefnawi obtained his Ph.D. in Electrical and Computer Engineering from Laval University in 1998 and he is a licensed professional engineer in the province of Ontario. He is the founder and director of the Software Defined Radio Lab in the ECE department at RMC. He is a contributing author of several refereed journals, book chapters, and proceeding papers in the areas of multiuser MIMO, massive MIMO, cognitive radio, wireless sensor network, and cooperative MIMO.

KN04 - By Prof. Hayato Yamana
Waseda University, Japan.
Secure Computation in the Cloud
May 10 (Auditorium) – 12:45 - 13:30

In this talk, I will pick up a privacy issue that effects to our society followed by introducing secure computation using fully homomorphic encryption (FHE) in cloud computing. IDC reported that “At least 40 percent of big data requires some level of security, from privacy protection to full-encryption.” Especially, medical information including images should be kept strictly secured. To handle such sensitive data, FHE is one of the key technology to realize secure computation, i.e., handling all data with encryption throughout the data life cycle. I will introduce the basic technologies used in FHE and its remained problems to be solved.

Hayato Yamana received his Dr. Eng. degree at Waseda University, Japan in 1993. He began his career at the Electrotechnical Laboratory (ETL) of the former Ministry of International Trade and Industry (MITI), and was seconded to MITI’s Machinery and Information Industries Bureau for a year in 1996. He was subsequently appointed Associate Professor of Computer Science at Waseda University in 2000, and has been a professor since 2005. From 2003 to 2004, he was IEEE Computer Society Japan Chapter Chair. From 2015 to 2017, he was director of IPSJ (Information Processing Society of Japan) and vice chairman of information and communication society of IEICE (the institute of electronics, information and communication engineers). From 2018, he is Board of Governor of IEEE Computer Society. His research area is big data analysis. Currently, his group engages in Japanese government funded project called “Secure Data Sharing and Distribution Platform for Integrated Big Data Utilization – Handling all data with encryption.” For more information, please refer to www.yama.info.waseda.ac.jp/crest/
Cloud computing reveals a remarkable potential to provide computational services to scientists, consumers and enterprises as utilities, on a pay-per-use approach. The cloud-computing paradigm can offer various types of services, such as computational resources for real-time multimedia applications, web services, social networking, urban mobility, health care, environmental science, etc. Furthermore, the simultaneous usage of services from different clouds can have additional benefits such as lower cost and high availability. Cloud computing is a very important topic in academia and industry. However, while there has been substantial research already, there remain important issues that must be addressed, such as performance, resource allocation, efficient scheduling, energy conservation, reliability, protection of sensitive data, security and trust, cost, availability, quality, interoperability.

Effective management of cloud resources is crucial to use effectively the power of cloud systems and achieve high system performance. Complex multiple-task applications may have precedence constraints and specific deadlines and may impose several restrictions and QoS requirements; therefore resource allocation and scheduling is a difficult task in clouds where there are many alternative heterogeneous computers. The scheduling algorithms must seek a way to maintain a good response time to leasing cost ratio.

Evaluating the performance of existing clouds is often not feasible. Simulation is a valuable alternative mean to examining cloud performance, and to assessing the impact of workload and system changes. In this talk, we will present state-of-the-art research covering a variety of concepts on resource allocation and job scheduling in the cloud. We will also provide future research directions in the cloud computing area.

Eleni Karatza is a Professor Emeritus in the Department of Informatics at the Aristotle University of Thessaloniki, Greece, where she teaches courses in the postgraduate and undergraduate level, and supervises doctoral and postdoctoral research. Dr. Karatza’s research interests include Computer Systems Modeling and Simulation, Performance Evaluation, Grid and Cloud Computing, Energy Efficiency in Large Scale Distributed Systems, Resource Allocation and Scheduling and Real-time Distributed Systems.

Dr. Karatza has authored or co-authored over 210 technical papers and book chapters including four papers that earned best paper awards at international conferences. She is senior member of IEEE, ACM and SCS, and she served as an elected member of the Board of Directors of the Society for Modeling and Simulation International. She served as Chair and Keynote Speaker in International Conferences. Dr. Karatza is the Editor-in-Chief of the Elsevier Journal “Simulation Modeling Practice and Theory” and Senior Associate Editor of the “Journal of Systems and Software” of Elsevier. She was Editor-in-Chief of “Simulation Transactions of The Society for Modeling and Simulation International” and Associate Editor of “ACM Transactions on Modeling and Computer Simulation”. She served as Guest Editor of Special Issues in International Journals.

Professor Joyati Debnath is currently a Full Professor of the Department of Mathematics and Statistics at Winona State University (WSU), Minnesota. She received M. S. degree in Pure Mathematics and Ph. D. degree in Applied Mathematics from Iowa State University, Ames, Iowa. She has been a faculty at Winona State University for over 27 years and teaching a wide range of
undergraduate courses in Mathematics. She received numerous Honors and Awards including the Best Teaching Award from Iowa State University, the Outstanding Woman of Education Award, and Who’s Who Among American Teachers. Her research interests include Integral Transform Theory, Partial Differential Equations and Boundary Value Problem, Associations of Variables, Discrete Mathematics, Software Engineering Metrics and Tools, Forensic Science, Complex Network Theory, and Topological Graph Theory. Professor Joyati Debnath has always been actively involved in research projects and has supervised many undergraduate students and graduate students in mathematics. Her students received recognition for best paper presentations at the national and international conferences. She is an author or co-author of over 70 publications in numerous refereed journals and conference proceedings in Mathematics, and Computer Science.

The Internet of Things (IoT) is a highly interconnected global network structure that consists of billions of things that have the potential to interact with people and with each other. IoT has enormous potential in almost every field and for the benefit of everyone. However, IoT presents new types of challenges from the point of view of security, trust and privacy. Organizations of all sizes need to rethink their security and individuals must protect their privacy and safety.

In addition, IoT security needs to be addressed earlier in the design process for each connected object knowing that it is likely a resource-constrained device such as a sensor node that has limited processing and storage capabilities, and often runs on batteries.

In this talk, I will discuss the basics of IoT security and how to design an IoT security strategy. I’ll also review some security solutions such as securing sensors from eavesdropping and radio jamming attacks, protocols and network security, data encryption, enhanced biometric authentication, next-generation firewalls and web gateways. They include also fault tolerance, which requires that all objects need to be secure by default, have the ability to know the state of the network and its services, and should be able to defend themselves against network failures and attacks.

Concerning ensuring privacy, some required principles will be discussed such as privacy by design and transparency.

In the last part of the talk, we will discuss the OTA IoT security and privacy trust framework, which includes a set of strategic principles necessary to help secure IoT devices and their data when shipped and throughout their entire life-cycle.
In this tutorial you will learn how to establish wireless computer communications with your peers in local neighborhoods, other cities, countries & continents – without using commercial and governmental infrastructure; How to take advantage of amateur radio satellites; How to exchange urgent e-mails without the Internet or telephone connections; How to use amateur radio in a school to save human lives and properties; How to create a local AMUNET (AMateur radio University NETwork) and expand visibility of your academic institution; How to contribute to weather observation (amateur radio meteorology) and tourism (amateur radio positioning & reporting systems); How to choose most proper hardware and software for all the above, and how to win over potential radio ‘pirates’ (hackers).

### Morning
- **Brief introduction of the amateur radio (basic principles, main ideas and goals)**
  - Increasing the popularity of STEM (Science, Technology, Engineering, Mathematics) by the amateur radio activity
  - How to find and join an amateur radio group? (a local ‘ham club’, a national union, etc.)
- **Computer-driven radio communications (focused on ‘packet-radio’)**
  - Direct link between two correspondents
  - Splitting information to smaller ‘packets’
  - Indirect link over a repeater (incl. 3D simulation)
  - Security and privacy in the amateur radio digital networks
- **Opportunities of amateur packet-radio satellites (PACSATs)**
  - Equipment requirements (special antennas and positioning devices)
  - Protocols ('broadcast' and ‘ftp0’)
  - Signal flow at a ground station (description of a complete setup)
- **Exchanging e-mail using an amateur radio BBS system**
  - Hardware for the amateur computer-related communications
  - Computers (PC XT, AT, i386, i486, Pentium, non-PC, etc.)
  - Radio stations (types, output capabilities, power supply, etc.) – practical demo
  - Antennas – personal low-cost experience
  - Radio modems (several examples related to overall types, data throughput, connectivity etc.)

### Afternoon
- **Hardware for the amateur computer-related communications (cont.)**
  - GPS receivers – practical demo
  - Implementation of sound-cards and various interfaces – practical demo from a ‘kitchen table’
- **Software solutions**
  - Server side (DOS, Windows, Linux systems) – several examples
  - Client side (OS-included software, other software) – several examples
  - Installing ‘factory-made’ software, or compiling it by yourself? – advantages of Linux & open-source solutions
  - Repeaters’ programs
- **Foreign experience**
  - Universities on the West (examples on what they have been doing in the amateur radio)
  - Humanitarian role of the radio amateur communications: examples on disasters such as hurricanes in the USA – where the amateurs voluntarily helped to the local community to save human lives, etc.
  - Winlink 2000 – a global emergency email service (how to join it – examples)
- **Networking opportunities**
  - AMUNET – Amateur University Network (local area, MAN etc)
  - APRS – Automatic Position Reporting System – practical demo
  - Widening the network (surrounding countries, global connections)
  - Scientific expeditions to remote and developing areas
  - Connecting with scientists at the International Space Station, ship crews, etc.
  - Interconnections to/from the TCP/IP world (‘gatewaying’ with the Internet)
  - Academic future: International summer (winter) school on the amateur radio

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1 “Ham radio volunteers help re-establish communications after Katrina” (“Computerworld”)

Volunteer ham radio operators are coming to the aid of relief agencies and emergency officials to help with badly needed communications in areas of Louisiana, Alabama and Mississippi ravaged early last week. *by Hurricane Katrina.*
**Frank Domoney**  
Director at Glencroft Ltd, Lavenham, Suffolk, UK


May 11 - Afternoon (15:00-18:00)  
(Auditorium)

Register to participate: www.med-space.org/icmcs18/deep-learning-tutorial

Adding machine vision to vehicles and factory robots enhances their productivity enormously. Machine Vision enabled by CUDA, Deep Learning, and GPUs is readily available for download and implementation on any Linux machine running Ubuntu 16.06 or higher with a powerful GPU card, for example GTX1080Ti Jetpack 3.2 which allows models to be trained on the PC/GPU and then downloaded to the TX2 development kit.

The TX2 can then be used for Image Recognition, Classification, Object Detection and Scene Segmentation which are the essential technologies for autonomous vehicles.

The same technologies along with image captioning can also be used in intelligent cameras to analyse scenes and provide Kolmogorov's compressed reporting in Smart City Environments. The Metropolis project and Deep Stream extends this to analysis of video streams.

The NVIDIA Deep Learning SDK provides powerful tools and libraries for designing and deploying GPU-accelerated deep learning applications. It includes libraries for deep learning primitives, inference, video analytics, linear algebra, sparse matrices, and multi-GPU communications. Car kits are available to allow integration of the embedded TX2 modules in smart cars.

The same observation applies to Robotics where vision systems used with pick and place machines allow accurate and repetitive assembly and construction. A simple learning system for robotic learning can be sourced for less than GB £5000, which includes a Robotic Arm, a conveyor belt and a sliding rail.

NVIDIA ISAAC is specialized in software development and integration in complex ICT environments. The ISAAC development kit is presently accepting applications.

As this tutorial is not a fully academic exercise but it is also targeting to foster enterprise creation, Team Selection and building will be important. Candidates will be expected to demonstrate the ability to teach themselves and contribute to adding value to the project. Furthermore, a Hackathon will be held to identify potential team members.
| S-I (1) | Animation, virtual reality, and 3D imaging  
Multimedia file systems and databases  
Audio, image, and video analysis  
Pattern recognition, Computer Vision, and medical applications  

**Chairs:** Imran Shafiq Ahmad, University of Windsor, Canada  
Harris Fred, University of Nevada, USA  

**May 10**  
12:00-12:45 (Room 1)  
**Agent-based Crowd Simulation Modeling in a Gaming Environment (ID - 64)**  
*Imran Shafiq Ahmad, Songqiao Sun, Boubakeur Boufama*  
**Improving Passive 3D Model Reconstruction using Image Enhancement (ID - 140)**  
*Sanaa Abu Alasal, Mohammad Alsmirat, Qanita Bani Baker, Yaser Jararweh*  
**A Robust Combined Audio and Video Watermark Algorithm against Cinema Piracy (ID - 153)**  
*Houria Kelkoul, Youssef Zaz, Hicham Tribak, Gerald Schaefer*  

**15:45-16:45 (Room 1)**  
**Design and realization of a new architecture based on multi-agent systems and reinforcement learning for traffic signal control (ID - 94)**  
*Maha Rezzai, Wafaa Dachry, Fouad Moutaouakkil, Hicham Medromi*  
**Optimization of Face Recognition Process with Haar Cascades and Eigenface Methods (ID - 152)**  
*Teddy Mantoro, Suhendi Suhendi, Media Ayu*  
**Rigid Image Registration by Bare Bones Fireworks Algorithm (ID - 35)**  
*Eva Tuba, Ivana Strumberger, Edin Dolicanin, Nebojsa Bacanin, Milan Tuba*  

| S-I (2) | Animation, virtual reality, and 3D imaging  
Multimedia file systems and databases  
Audio, image, and video analysis  
Pattern recognition, Computer Vision, and medical applications  

**Chairs:** Milan Tuba, State University of Novi Pazar, Serbia  
Wu Qianyu, Tsinghua University-Beijing, China  

**May 11**  
11:00-13:15 (Room 1)  
**Color Images Segmentation using Pairwise Markov Chain (ID - 14)**  
*Ameur Meryem, Idrissi Najlae, Daoui Cherki*  
**An Improved Method for Oil Spill Detection (ID - 52)**  
*Qianyu Wu, Xinyue Zhang and Xudong Zhang*  
**NLP-Enriched Automatic Video Segmentation (ID - 96)**  
*Mohannad Almousa, Rachid Benlamri, Richard Khoury*  
**Emotion Recognition in E-learning Systems (ID - 59)**  
*Oussama Elhammoumi, Fatimaezzahra Benmarrakchi, Nihal Ouherrou, Jamal El Kafi, Ali El Hore*  
**Improved YOLOv2 Object Detection Model (ID - 98)**  
*Rui Li, Jun Yang*  
**Robust Human Activity Recognition in Indoor Environment Using WSVM-Smote-VS Model (ID - 137)**  
*M'hamed Bilal Abidine, Belkacem Fergani*  
**Design of VDD generator circuit for a passive UHF RFID tag in 180nm CMOS (ID - 69)**  
*Zakia Menssouri, Zineb Mrabet, Lahbib Zenkouar, Hassan Qjidaa Karim El Khadiri*
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<th>Session</th>
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</table>
| S-II    | Internet and Web-Based Systems  
E-learning, e-gov, and e-commerce  
Localization and tracking  
Systems and Networks security  
Wireless network algorithms and protocols |
| Chairs: | Hayato Yamana, Waseda University, Japan  
Rachid Benlamri, Lakehead University, Ontario, Canada.  
Lahoucine Elmaimouni, FPO, Ouarzazate, Morocco |

**May 10**  
15:45-16:45 (Auditorium)

- **Facebook and MOOCs: What kind of alliance?** (ID - 82)  
  Hajar Zankadi, Imane Hilal, Najima Dooudi, Abdellah Idrissi
- **Modeling Telemedicine Security Requirements using a SysML Security Extension** (ID - 24)  
  Ilham Maskani, Jaouad Boutahar, Souhail El Ghazi El Houssaini
- **An Optimal and Secure Routing Protocol for Wireless Sensor Networks** (ID - 61)  
  Hilmi Lazrag, Rachid Saadane, Moulay Driss Rahmani
- **Performance Evaluation of QoS-CMS Mechanism for Inter-domain Quality of Service** (ID - 143)  
  Sara Bakkali, Hafsa Benaboud, Moud Ben Mamoun

**May 11**  
11:00-13:15 (Room 2)

- **Comparative study on DOS attacks Detection Techniques in SIP-based VOIP networks** (ID - 113)  
  Rababe Safoine, Soufyane Mounir, Abdelmajid Farchi
- **Security Vulnerabilities Analysis Method for Java Bytecode Programs** (ID - 129)  
  Safaa Achour, Mohammed Benattou
- **Robust Observer-Based Controller design for Uncertain Discrete-time Systems in Finite Frequency Domain** (ID - 26)  
  Ismail Errachid, Redouane Chaibi, Badreddine El Haiek, Abdelaziz Hmamed, Elhoussaine Tissir
- **A New Framework Using PCA, LDA and KNN-SVM to Activity Recognition Based Smartphone’s Sensors** (ID - 28)  
  Ihssene Menhour, M’Hamed Bilal Abidine, Belkacem Fergani
- **Multispectral palmprint recognition based on fusion of local features** (ID - 29)  
  Amine Amraoui, Mounir Ait Kerroum, Youssef Fakhri
- **Mono Carrier and Multicarrier Systems Performances under the Narrowband PLC Channel Impairments** (ID - 75)  
  Safa Najjar, Fatma Rouissi, A. J. Han Vinck, Hela Gassara, Adel Ghazel
- **Hybrid chicken swarm optimization with GRASP Constructive procedure using multi-threads to solve the quadratic assignment problem** (ID - 115)  
  Soukaina Cherif Bourki Semlali, Mohammed Essaid Riffi, Foyçal Chebihi
- **Modeling of Rosen-type piezoelectric transformer by mean of a polynomial approach** (ID - 151)  
  Derandraibe Jeannot Falimiaramanana, Faniry Emilson Ratolojanahary, Ismail Naciri, Pierre Maximin Rabotovao, Lahoucine Elmaimouni, Jean-Etienne Lefebvre, Mohamed Rguiti, Tadeusz Gryba
- **New Analog Li-Ion Battery Charger Using Pulsed Charging Method** (ID - 57)  
  Fouad Farah, Mustapha El Alaoui, Karim El Khadiri, Qidaa Hassan
- **SOLAM: A Novel Approach of Spatial Aggregation in SOLAP Systems** (ID - 33)  
  Zemri Farah Amina, Karine Zeitouni and Djamila Hamdodou
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<tr>
<td>Performance enhancement of wireless sensor networks using an efficient coding approach (ID - 13)  Youssra Chatei, Imane Maslohi, Kamal Ghoumid, El Miloud Ar Reyouchi  Use of Split Ring Resonators with Dipole and PIFA Antenna to Reduce the SAR in a Spherical Multilayered Head model (ID - 49)  Hafawa Messaoudi, Taoufik Aquili  Comparison and Evaluation of SAR Induced in Four Human Head models for Two Types of Antennas Used in Mobile Telephones (ID - 55)  Lakbir Belrhiti, Fatima Riouch, Abdelwahed Tribak, Jaouad Terhzaz, Abdelmalik Bouyahyaoui, Angel Mediavilla Sanchez  Miniature MIMO Antennas for 5G Mobile Terminals (ID - 71)  Ibra Dioum, Idy Diop, Kadiiatou Diallo, Mansour Khouma, Lamine Sane  Design and evolution of a matrix of Butler 4*4 feeding a network antenna with the frequency 26 GHz (ID - 85)  Louati Siwar, Mohamed Ould Elhassen  Design of UHF RFID Z shaped slot patch tag for human monitoring applications (ID - 92)  Bouhassoune Ibttissame, Rachid Saadane</td>
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May 10 11:15-12:00 & 12:45-13:30 (Room 3)

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<th>S-III (2)</th>
<th>Modern Antennas and Communication Systems (MACS)</th>
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<tr>
<td>Chairs: Rachid Benlamri, Lakehead University, Ontario, Canada  Ibra Dioum, University of Cheikh Anta Diop of Dakar, Senegal</td>
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Modern Antennas and Communication Systems (MACS)

**Chairs:** Joyati Debnath, Winona State University, USA.
Mohsine Khalladi, FS Tetouan, Morocco.

### May 11 09:00-10:30 (Room 3)

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**Local Orals**

An unsplit formulation of the 3D-PML absorbing boundary conditions for TLM-Method in time domain (ID - 159)
Mohamed Ibenyaich, Mohammed Kanjaa, Soufiane El Adraoui, Khalid Mounirh, Mohsine Khalladi

New design of compact CSRR antenna loaded with rectangular slots (ID - 160)
Khalid El Ouhabi, Otman El Mrabet

Time domain modeling and analyzing of optically active media (ID - 161)
Khalid Mounirh, Soufiane El Adraoui, Yasser Ekdhiha, Mohamed Iben Yaich, Mohsine Khalladi

New Numerical Model of Plasma with Epstein Distribution (ID - 162)
Yasser Ekdhiha, Khalid Mounirh, Soufiane El Adraoui, Mohamed Iben Yaich, Mohsine Khalladi
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<td>Eleni Karatza, Aristotle University of Thessaloniki, Greece</td>
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<td>Toward a constraint based test case generation of parallel BPEL process (ID - 78)</td>
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<td>Towards a New Micro Agents Middleware for Massively Distributed Systems (ID - 104)</td>
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<td><strong>Chairs:</strong> Joyati Debnath, Winona State University, USA</td>
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<td>Rachid Saadane, EHTP, Morocco</td>
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<td>Hafsa Benaboud, FS Rabat, Morocco</td>
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<td>The Impact of Electronic Learning in Workplace: Case Study of a Multinational Company in Morocco. (ID - 42)</td>
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<td>Spatio-temporal context for improving sentiment analysis accuracy (ID - 147)</td>
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<td>Admission Control Algorithm for Network Slicing Management in SDN-NFV Environment (ID - 36)</td>
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<td>Software Defined Networking for Smart Quality of Service Management on New Generation Network. (ID - 118)</td>
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<td>Restructuring Iceberg Lattice For Multilevel Analysis (ID - 124)</td>
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<td>Ilyass Belghannou, Rafik Taouil</td>
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<td>Compact Sensor Based On CRLH For Liquid Mixture Application (ID - 4)</td>
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<td>Mohamed Lashab, Mounir Belattar, Linda Djourablia</td>
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<td>A Novel Miniaturized Circular UWB Patch Antenna: Referencing Study (ID - 110)</td>
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<td>Achrif Elaouerghi, Amal Ayyf, Larbi Bellarbi</td>
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<td>Automatic Classification and Negotiation of SLA for more Availability of Services (ID - 120)</td>
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<td>Zineb Bakraouy, Amine Baina, Mostafa Bellaikhi</td>
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<td>UHF Band-pass Filter Based on Parallel Coupled Resonators (ID - 6)</td>
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<td>Analysis of an Optical CDMA Communication System Model (ID - 7)</td>
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<td>A Security Policy for Access Control to Academic Services Based on Public Key Infrastructures and Smart Cards (ID - 93)</td>
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19 May 10 17:30-18:30
**Local Posters**

**A Generic Architecture of Augmented and Virtual Reality in Classrooms (ID - 62)**  
Houda Elkoubaiti, Radouane Mrabet

**Exploring the Outcomes of Electronic Human Resource Systems in SEPCO III Company (ID - 41)**  
Aniss Ait Allo, Omar Rajaa

**A small patch antenna for future 5G smartphone (ID - 130)**  
Safaa Benazouz, Raefat Jalila El Bakkouchi, Abedilah Ghammaz

**Desing of a low cost meander line RFID tag antenna using 3D printing Technology (ID - 157)**  
Anouar Abattoyu, Mohamed Ali Ennasar, Mohamed Douieb, Otman El Mrabet

**A Low cost automated RFID tag antenna measurement set-up based on UHF-RFID Reader (ID - 158)**  
Larbi Moutis, Mohammed Ali Ennasar, Ikram Aznabet, Otman El Mrabet, Abdelkrim Farkhsi

**New Design Of Polygonal Antenna for Ka band Applications (ID - 67)**  
Rabah Mohammed Amine, Bekhti Mohammed

**Frequency Estimation and Tracking in Electrical Power Systems (ID - 76)**  
Farid Ykhlef

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**Contacts**

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<tr>
<th>Abdelaaziz El Hibaoui</th>
<th>Youssef Zaz</th>
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<td><a href="mailto:zaz@ieee.org">zaz@ieee.org</a></td>
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