

ADVANCE 2019 Technical Programme

The Workshop program will be composed of several invited speaker presentations, accepted papers presentations during the 21th and 22th of January 2019.



ADVANCE 2019 Programme on Glance

	Monday Jan 21th, 2019		Tuesday Jan 22th, 2019
08:30-09:00	Registration/welcome	08:30-09:00	Registration/welcome
09:00-09:30	Opening from General Chair	09:00-09:30	Technical session 4 (SP)
09:30-10:15	Invited Talk 1	09:30-10:15	Invited Talk 3
10:15-10:45	Coffee break	10:15-10:45	Coffee break/Posters
10:45-12:15	Technical session 1	10:45-11:45	Technical session 5
		11:45-12:15	Industrial Panel
12:15-13:45	Lunch break	12:15-12:30	Final remarks and closing
13:45-14:45	Technical session 2 (SP)	12:30-14:00	Lunch break
14:45-16:15	Technical session 3	14:00-15:15	Professional Short Courses
16:15-16:45	Coffee Break/Posters	15:15-15:30	Break
16:45-17:30	Invited Talk 2	15:30-16:45	Professional Short Courses
19:30-22:30	ADVANCE Gala Diner		

OPENING TALK & INVITED TALKS

Invited Talk 1: ICT Development in Cape Verde

Speaker: Mr Antonio Fernandes, PCA Nosi, Cape Verde

Bio: Antonio Joaquim Fernandes wa born on October 9, 1960 in Cape Verde, loves to learn and teach mathematics and physics.Has six children, all grown-ups. He is Currently serving as CEO at NOSi a State owned Gov-Tech company. It is the enterprise in charge of everything about technology for The Cape Verde government (e-Government). He completed master's degrees in mathematics and physics at Ball State University, USA in 1996, where he also completed, in 1983, a degree in Ocean Engineering at Florida Institute of Technology. He has alternated teaching of Mathematics and Physics with work in Engineering, both in Cape Verde and in the Azores. As a Technical Executive Director, he was responsible for coordinating the design and implementation of Vila Verde Resort in Sal, Copacabana in Mindelo, among other real estate projects.

He served as Minister of Education, Science, Youth and Sports as well as Minister of Infrastructure and Housing in the government of the 5th Legislature. He is a member of the American Physical Society, the National Physics Honor Society, the Scientific Research Society and the Mathematical Association of America. He is co-author of a scientific paper on energy extraction from the ocean waves and the author of some University Texts on Applied Calculus and Operational Research, published by the African Virtual

University. Still working to complete a Doctoral Program, increase the number of video lessons published on YouTube and work on some basic university texts on mathematics and physics.

Invited Talk 2: Blockchain - opportunities and limitations
Professor Hakim Abdelhafid, University of Montreal, Canada

Abstract: This talk will start with a brief overview of **Blockchain** technology. Then, it will present some interesting use cases of the technology that have been implemented and tested. More generally, it will identify industry segments where Blockchain can play a key role in solving existing issues. Then, it will identify the limitations of the technology; more attention will be paid to the problem of scalability and off-chain data feeds to the Blockchain (aka oracles). The talk will conclude by briefly overviewing our work at Montreal Blockchain Lab and our view on the future of Blockchain.

Bio: Dr. Hafid is Full Professor at the University of Montreal, where he founded the Network Research Lab (NRL) in 2005. He is also research fellow at CIRRELT, Montreal, Canada. Dr. Hafid published over 230 journal and conference papers; he also holds 3 US patents. Prior to joining U. of Montreal, he spent several years, as senior research scientist, at Telcordia Technologies (formerly Bell Communications Research), NJ, US working in the context of major research projects on the management of next generation networks. Dr. Hafid has extensive academic and industrial research experience in the area of the management of next generation networks. His research interests include also cloud/mobile cloud/fog, IoT, blockchain and intelligent transport systems.

Invited Talk 3: The role of ICT in promoting economic development, government transparency and fighting in Africa
Dr Isaiás Barreto da Rosa, Chairman Multisectoral Regulatory Agency of the Economy (ARME), Cape Verde

Abstract: The African economy is largely based on agriculture and the export of commodities. The continent faces tremendous challenges when it comes to economic development and promotion of government transparency. Traditional strategies for fighting corruption involve mainly legislative and administrative reforms and neglect the role of ICT in this process. This presentation will highlight the important contribution ICT can bring to promoting the economic development and government transparency in the continent.

Bio: Dr. Isaias Barreto da Rosa is the Chairman Multisectoral Regulatory Agency of the Economy (ARME) since November 2018 and served as ECOWAS (Economic Community of West African States) Commissioner for Telecommunications and Information Technologies between February 2014 and February 2018. He concluded his post-doc at the Tallinn University, Estonia, he holds an Advanced Studies Diploma and a PhD degree (Hons) in Education and Human Development (University of Santiago de Compostela, Spain), a Master degree in Management Development (Euro-Arab Management School, Granada, Spain), and a licentiate degree in Computer Science (Faculty of Science, University of Lisbon, Portugal). Before joining ECOWAS, Dr. Rosa worked as a Software developer at the Center for the studies of Information Problems at the Portuguese Catholic University, Portugal as well as researcher and lecturer at Tallinn University, Estonia. He also worked as professor at the University Jean Piaget of Cape Verde for 13 years, where he also assumed several other responsibilities such as head of the unit (department) of science and technology, Director of the Technological Division; Director of the Digital Education Lab, Cisco Academy Manager, Microsoft IT Academy Manager, etc. Dr. Rosa has also worked as a consultant for national and international organizations, has extensive

experience in the definition of ICT policies and regional integration issues. He has dozens of research papers published in journals and proceedings of international conferences.

TECHNICAL SESSIONS

Technical session 1 - Monday, January 21th, 2019

Paper 1.1 A secure and smart environment for the transportation of dangerous goods by using Blockchain and IoT devices

Adnan Imeri^{1,2}, Nazim Agoulmine², and Djamel Khadraoui¹

¹ Luxembourg Institute of Science and Technology, Luxembourg

² University of Evry Val d'Essonne - Paris Saclay University, France

Paper 1.2 A Testbed Tool for Comparing Usability and Security of Mobile Authentication Mechanisms

Karima Boudaoud¹, Marco Winckler¹, Zauwali S. Paki¹, Philippe Palanque²

¹Université Côte d'Azur, CNRS, I3S, France

²Université Paul Sabatier, IRIT, France

Paper 1.3 Communication Technologies integration into the Electrical System of the city of Praia

Claudino Mendes¹ and Mateus Andrade¹

¹Universidade de Cabo Verde, Praia, Cabo Verde.

Technical session 2 - Monday, January 21th, 2019 (Short Papers)

Paper 2.1 Architecture and platform for Fog Computing

Celestino Barros and Hugo Paredes, Universidade de Cabo Verde, Universidade de Trás-os-Montes e Alto Douro

Paper 2.2 Future Internet: TALKING WITH 5G

Janet Da Luz and Nilza Rocha

Computer Science Engineers, Cape Verde

Paper 2.3 Overview of NB-IoT communications in 5G

Donia Djebali¹, Nazim Agoulmine², and Sonia Ben Rejeb³

¹ Higher Institute of Computer Sciences of Tunis (ISI) Carthage University, Ariana, Tunisia and IBISC Laboratory, University of Evry - Paris Saclay University, France

² IBISC Laboratory, University of Evry - Paris Saclay University, France

³ High School of Communication of Tunis (Supcom) Carthage University, Ariana, Tunisia

Paper 2.4 Performance evaluation of mmWaves based 3-D indoor positioning system

Lotfi Tamazirt^{1,2}, Farid Alilat¹, Nazim Agoulmine²

¹ University of Sciences and Technology Houari Boumediene, Algiers, Algeria

² IBISC Lab, University of Evry Val-d'Essonne, Paris-Saclay University, France.

Technical session 3 - Monday, January 21th, 2019

Paper 3.1 On the Fog-Cloud Cooperation: How Fog Computing can address latency concerns of IoT applications

Amir Karamoozian¹, Abdelhakim Hafid¹, El Mostapha Aboulhamid²

¹ Network Research Lab (NRL), DIRO University of Montreal, Canada

² Department of Computer Science and Operations Research University of Montreal, Canada

Paper 3.2 Security Issues in Hybrid Approaches: Context-based and Software-Defined-Networks

Paulo Sampaio and Robson Gonzaga

Universidade Salvador (UNIFACS), Brazil

Paper 3.3 Using Early Warning Score for vital signs analysis in IoT healthcare environment (pending)

David Viana¹, Paulo Cunha², Wendell Rodrigues¹, Odorico Monteiro³ and Mauro Oliveira¹

¹ Instituto Federal de Ciência e Tecnologia do Ceará - IFCE

² Universidade Federal de Pernambuco - UFPE

³ Universidade Federal do Ceará – UFC

Technical session 4 - Tuesday, January 22th, 2019 (Short Papers)

Paper 4.1 KA TEN DOKUMENTU – An exploratory empirical research on students generated content: the case of Communication and Multimedia students of the University of Cape Verde on crioulo identity

Álvaro Patricio Elgueta Ruiz and José Augusto Abreu Fernandes, University of Cape Verde, Cape Verde

Paper 4.2 Efficient management of residues collection Study case – Praia City

Alexsandro Batista, Carlos Correia, Hélder Gomes and Ivanildo Silva

Science and Technology's College of University of Cape Verde, Cape Verde

Paper 4.3 Service Execution Orchestrator for Iol (pending)

Lucas Sales Vieira, Marcio E. F. Maia, and Miguel Franklin de Castro

Group of Computer Networks, Software Engineering and Systems

Federal University of Ceara, Fortaleza, Brazil

Paper 4.4 Towards a User Profile Generation Approach for IoT Applications

Cayk Barreto, Tales Paiva, Marcio Maia, and Rossana M. C. Andrade, Group of Computer Networks, Software Engineering and Systems, Federal University of Ceara, Fortaleza, Brazil

Technical session 5 – Tuesday, January 22th, 2019

Paper 5.1 A Blockchain-based Educational Record Repository

Emanuel E. Bessa and Joberto S. B. Martins

Universidade Salvador (UNIFACS), Brazil

Paper 5.2 A Metric for Resource Usage Evaluation in Cloud Computing Environments

Tiago da Silva Nascimento² Emanuel Coutinho^{1,2,6} Carla Ilane Bezerra^{4,6} and

Jose Neuman de Souza^{5,6}

¹ IBITURUNA { Research Group of Cloud Computing and Systems

² Virtual University Institute (UFC-VIRTUAL), Federal University of Ceara, Fortaleza, Ceara, Brazil

³ Federal University of Bahia, Salvador (UFBA), Bahia, Brazil

⁴ Campus Quixada { Federal University of Ceara (UFC) { Quixada, Brazil

⁵ Master and Doctorate in Computer Science (MDCC)

⁶ Federal University of Ceara (UFC) { Fortaleza { Ceara { Brazil

Industrial Panel – Tuesday, January 22th, 2019:

Topic: Future of ICT in Cape Verde: Challenges in education, health, transportation, etc. Experiences in other countries.

Moderator: Professor Claudino Mendes.

PROFESSIONAL SHORT COURSES

Short course 1: Introduction to Blockchain Technology: Concepts and Applications

By Prof Hakim Abdelhafid, University of Montreal, CANADA

Duration: 1h15

Abstract: This short course will start with an introduction to Blockchain technology; it will also briefly cover cryptographic primitives and consensus protocols used to realize Blockchain. It will introduce the concept of smart contracts which are fundamental to the implementation of Blockchain applications. It will present the different categories of Blockchain. Some Blockchain use cases will be presented. The course will conclude with presenting the limitations and the future of Blockchain.

Bio: Dr. Hafid is Full Professor at the University of Montreal, where he founded the Network Research Lab (NRL) in 2005. He is also research fellow at CIRRELT, Montreal, Canada. Dr. Hafid published over 230 journal and conference papers; he also holds 3 US patents. Prior to joining U. of Montreal, he spent several years, as senior research scientist, at Telcordia Technologies (formerly Bell Communications Research), NJ, US working in the context of major research projects on the management of next generation networks. Dr. Hafid has extensive academic and industrial research experience in the area of the management of next generation networks. His research interests include also cloud/mobile cloud/fog, IoT, Blockchain and intelligent transport systems.

Short course 2: Intelligent Communication Resource Allocation: Smart City Application

By Prof Dr. Joberto S.B.Martins, University of Salvador (UNIFACS), BRAZIL

Duration: 1h15

Abstract: Internet and networks are evolving and expanding their utilization dramatically. New paradigms, new protocols, new intelligent solutions and large scale complex systems are emerging on various areas of our daily life. Researchers and engineers need to understand the current network evolution trends and to know what relevant new technologies are involved. This short course discusses network evolution and presents the adoption of Machine Learning with Software-Defined Networking programming paradigm for communications resource in the context of Smart City projects. This will allow a comprehension on how new technologies can improve system development and highlight their potential in the context of Smart-City.

Bio: PhD in Computer Science, UPMC, Paris, 1986; M.Sc. in Electronic Engineering - PII, Holand, 1979. Visiting Scientist at ICSI – University of California Berkeley (USA) in 1995. Full Professor at UFPA (1977-2000). Full Professor at Salvador University (Unifacs) since 2000, Vice-President for Distance Learning

at Salvador University (Unifacs) from 2003 to 2009, Full Professor at UFPB (Federal University of Paraiba) from 1977 to 1999, Director of “Instituto de Tecnologia Eletro-Eletrônica (ITEEL)” during 05 years, CEO of “ITELCON – Informática Teleinformática Ltda” from 1986 to 1999, Consultant on Computer Networks and Telecommunications since 1986. Current position: full Professor at Salvador University - UNIFACS and Visiting Professor at Hochschule für Technik und Wirtschaft des Saarlandes – HTW Germany. Research interest see <https://jobertomartins.com>

**Short Course 3 : Large Scale Deployment of IoT Applications in the Cloud-Fog-IoT Environment
By Professor Nazim Agoulmine, University of Evry – Paris Saclay University, France**

Duration: 1h15

Abstract: Information and Communication Technologies (ICT) to improve healthcare quality and cost reduction has been recognized as the only viable solution to sustain healthcare systems and reduce divide. It is being implemented as a national priority in major world economies to face the ageing society problem and the cost of healthcare. This talks aims to introduce the technologies that are changing the game namely IoT, Edge Computing (a.k.a. Fog Computing) and Cloud Computing and how these technologies are glued together along with novel data mining techniques to allow collecting and reasoning on environment and medical to make diagnosis and detect anomalies in large populations or geographic area. Public health policy makers and other organisations in the health sector could largely benefit from these technologies.

Bio: Nazim Agoulmine holds a PhD in Computer Sciences from the University of Paris XI, France. He is a full professor at the university of Evry Val d'Essonne / Paris Saclay University since 1992 and a member of the IBISC Research Laboratory. Since 2016, he is the vice president of the University of Evry in charge of Digital Strategy. From 2011 to 2016, he was on secondment with the French National Research Agency where he held several positions: chair and vice-chair of the Digital Sciences and Mathematics (NuMa) department (2011-2016), Director of the INFRA (Hardware and Software Infrastructures for Future Internet) programme (2011-2013) and director of the INS (Digital Engineering and Security) programme (2012). From 2013 to 2011, Prof. N. Agoulmine has directed the LRSM research laboratory (University of Evry) and led several European research projects in the area of Networking and participated to several international research initiatives with South Korea (WCU), Brazil (AmSud), Ireland (Marie Curie) and Italy (IIT). He is a specialist in the area of networking and Cloud Computing technologies. He published more than 100 conference and journal papers in these areas and chaired several International Conferences and Workshops.

Short course 4: Privacy and Security of Internet Of Things

By Prof Dr. Karima Boudaoud, University of Nice Sophia Antipolis, France

Duration: 1h15

Abstract: The goal of this short course is to give an overview about the privacy and security issues. This lecture will focus specifically on the risks regarding our privacy and the Internet, security of connected objects and some best practices to reduce security and privacy risks.

Bio: Karima Boudaoud is Associate Professor at the University of Nice Sophia Antipolis. She had obtained her PhD. degree in Computer Sciences from Ecole Polytechnique Fédérale de Lausanne (EPFL). Her main research interest is Human-centric Security and Privacy management i.e. a security and privacy management oriented towards the User and her previous research field was intrusion detection using multi-agent system. She has participated in several research projects in the area of Networks and

Services Security funded by the European Commission, CNRS-INRIA-DGA and Fond National Suisse. She has servers in several TPC and OC of several national and international (IEEE/IFIP or others), conferences and workshops (IM, WWW, ICC, NOMS, etc.).