

# PROGRAM GUIDE

## AINA-2020

The 34<sup>th</sup> International Conference on  
Advanced Information Networking and Applications



April 15-17, 2020

University of Campania "Luigi Vanvitelli", Caserta, Italy

### Technically Supported by:

University of Campania "Luigi Vanvitelli"



Fukuoka Institute of Technology



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## AINA-2020 Organizing Committee

### General Co-Chairs

Flora Amato, University of Naples "Federico II", Italy

Isaac Woungang, Ryerson University, Canada

Farookh Hussain, University of Technology, Sydney, Australia

### Program Committee Co-Chairs

Francesco Moscato, University of Campania "Luigi Vanvitelli", Italy

Lidia Ogiela, Pedagogical University of Cracow, Poland

Tomoki Yoshihisa, Osaka University, Japan

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Minoru Uehara, Toyo University, Japan

Hsing-Chung Chen, Asia University, Taiwan

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Francesco Piccialli, University of Naples "Federico II", Italy

Alessandra Amato, University of Naples "Federico II", Italy

Giovanni Cozzolino, University of Naples "Federico II", Italy

### Finance Chair

Makoto Ikeda, Fukuoka Institute of Technology, Japan

### Web Administrator Co-Chairs

Donald Elmazi, Fukuoka Institute of Technology, Japan

Miralda Cuka, Fukuoka Institute of Technology, Japan

Kevin Bylykbashi, Fukuoka Institute of Technology, Japan

### Steering Committee Co-Chairs

Makoto Takizawa, Hosei University, Japan

Leonard Barolli, Fukuoka Institute of Technology, Japan

### **Message from AINA-2020 Steering Committee Co-Chairs**

Welcome to the 34th International Conference on Advanced Information Networking and Applications (AINA-2020). It is our great pleasure and honor to held this edition of the conference at University of Campania "Luigi Vanvitelli", Caserta, Italy from April 15 to April 17, 2020. On behalf of the AINA Steering Committee and AINA-2020 Organizing Committee, we would like to express to all participants our cordial welcome and high respect.

AINA is an International Forum, where scientists and researchers from academia and industry working in various scientific and technical areas of networking and distributed computing systems can demonstrate new ideas and solutions in distributed computing systems.

AINA was born in Asia, but it is now an International Conference with high quality thanks to the great help and cooperation of many international friendly volunteers. AINA is a very open society and is always welcoming international volunteers from any country and any area in the world. In conjunction with AINA-2020 main conference, we have also 17 international workshops.

An international conference can be organized by support and great voluntary efforts of many people and organizations. Our main responsibility is to coordinate various tasks carried out with other willing and talented volunteers.

We would like to thank AINA-2020 General Co-chairs, PC Co-chairs, Workshops Co-chairs, Track Area Chairs, PC Members, and Workshops Organizers for their great efforts to make AINA-2020 a very successful event. We have special thanks to the Finance Chair, and Web Administrator Co-chairs.

We would like to take opportunity to thank all members of the organization committee and program committee as well as all reviewers for their hard work to make the reviews on time and authors for submitting the papers. We would like to thank Local Arrangement Team for the technical support and good local arrangement for the conference. We do hope that you will have a great time in Caserta, Italy.

**AINA Steering Committee Co-Chairs**

**Makoto Takizawa**, Hosei University, Japan

**Leonard Barolli**, Fukuoka Institute of Technology, Japan

### **Message from AINA-2020 General Co-Chairs**

It is our great pleasure to welcome you all at the 34th International Conference on Advanced Information Networking and Applications (AINA-2020), which will be held at University of Campania "Luigi Vanvitelli", Caserta, Italy from April 15 to April 17, 2020.

AINA International Conference is a forum for sharing ideas and research work in the emerging areas of information networking and their applications. The area of advanced networking has grown very rapidly and the applications have experienced an explosive growth especially in the area of pervasive and mobile applications, wireless sensor networks, wireless ad-hoc networks, vehicular networks, multimedia computing and social networking, semantic collaborative systems, as well as Grid, P2P, IoT, Big Data and Cloud Computing. This advanced networking revolution is transforming the way people live, work, and interact with each other, and is impacting the way business, education, entertainment, and health care are operating. The papers included in the proceedings covers theory, design and application of computer networks, distributed computing and information systems.

Each year AINA receives a lot of paper submissions from all around the world. It has maintained high quality accepted papers and is aspiring to be one of the main international conferences on the Information Networking in the world. In conjunction with AINA-2020 conference there are 17 workshops, which also accepted good quality papers.

An international conference of this size requires the support and help of many people. A lot of people have helped and worked hard to produce a successful AINA-2020 technical program and conference proceedings. First, we would like to thank all authors for submitting their papers, the session chairs and distinguished keynote speakers. We are indebted to Program Area Chairs, Program Committee Members and reviewers, who carried out the most difficult work of carefully evaluating the submitted papers.

We would like to give our special thanks to Prof. Makoto Takizawa and Prof. Leonard Barolli, the Co-chairs of the Steering Committee for their strong encouragement, guidance and insights, and for spending a lot of energy for conference organization and shaping the conference program. We would like to thank PC Co-chairs and Workshops Co-chairs of AINA-2020 for their great contribution to the success of the conference. Our special thanks go to the Finance Chair and Web Administrator Co-chairs.

Finally, we would like to thank the Local Arrangement Team for the support and good local arrangement for the conference. We do hope that you will have a great time in Caserta, Italy.

#### **AINA-2020 General Co-Chairs**

**Flora Amato**, University of Naples "Federico II", Italy

**Isaac Woungang**, Ryerson University, Canada

**Farookh Hussain**, University of Technology Sydney, Australia

## Message from AINA-2020 Program Committee Co-Chairs

Welcome to the 34th International Conference on Advanced Information Networking and Applications (AINA-2020), which will be held at University of Campania "Luigi Vanvitelli", Caserta, Italy from April 15 to April 17, 2020.

The purpose of AINA conference is to bring together researchers, developers, and industrial experts to share new ideas and recent research results in the emerging areas of information networking and their applications. The papers included in the proceedings cover all aspects of theory, design, and application of computer networks and distributed computing systems. Most of the papers deal with new trends in information networking, such as wireless sensor networks, ad-hoc networks, cloud computing, peer-to-peer systems, grid computing, pervasive and ubiquitous systems, multimedia systems, security, multi-agent systems, IoT and web-based systems.

This edition AINA received 476 paper submissions from all over the world. Each submission was peer-reviewed by program committee members and invited external reviewers. Finally, the program committee accepted 124 papers (about 26% acceptance ratio), which will be presented during the conference days. Unfortunately, many interesting and good papers could not be accepted in AINA-2020 due to the limited number of time slots allocated for presentations at the conference.

We are very proud and honored to have two distinguished keynote talks by Prof. Paul Krause, University of Surrey, United Kingdom and Prof. Letizia Tanca, Polytechnic University of Milan, Italy, who will present their recent work and will give new insights and ideas to the conference participants.

Organizing an international conference of this size is of course a team effort. Therefore, we gladly admit that we had the help of many very professional people. First of all, we would like to thank all the authors for their interesting contributions since they shape the program and make it interesting for the audience. Moreover, we would like to express our thankfulness to all program-vice chairs for their great efforts. Additionally, we would like to thank all program committee members and reviewers who carried out the most important work to evaluate the submitted papers. We also thank the Workshops Co-chairs for organizing many excellent workshops and symposiums, which enrich the conference and provide additional opportunities for discussions and future co-operations.

The great success of the AINA conference series would not be possible without the enormous commitment and support of the steering committee co-chairs Prof. Makoto Takizawa and Prof. Leonard Barolli. Therefore, we would like to thank them for their strong encouragement and guidance.

The general coordination of an event such as AINA conference requires a lot of coordination effort as well as many other activities related to the conference organization. Here, we thank the General Co-chairs for their great support and invaluable suggestions. We give special thanks to the Finance Chair and Web Administrator Co-chairs for their great efforts and efficient work to deal with many conference matters.

We hope you will enjoy the conference and readings and have a great time in Caserta, Italy.

### AINA-2020 Program Committee Co-Chairs

**Francesco Moscato**, University of Campania "Luigi Vanvitelli", Italy

**Lidia Ogiela**, Pedagogical University of Cracow, Poland

**Tomoki Yoshihisa**, Osaka University, Japan

### Message from AINA-2020 Workshops Co-Chairs

Welcome to AINA-2020 Workshops to be held in conjunction with the 34th International Conference on Advanced Information Networking and Applications (AINA-2020) at University of Campania "Luigi Vanvitelli", Caserta, Italy from April 15 to April 17, 2020. The goal of AINA workshops is to provide a forum for international researchers and practitioners to exchange and share their new ideas, research results, and ongoing work on leading-edge topics in the different fields of information networks and their applications. Some of the accepted workshops deal with topics that open up perspectives beyond the ordinary, thus, enriching the topics usually addressed by the AINA conference.

For this edition, the following 17 symposiums and workshops will be held with AINA-2020.

- The 16th International Symposium on Frontiers of Information Systems and Network Applications (FINA-2020)
- The 16th International Workshop on Heterogeneous Wireless Networks (HWISE-2020)
- The 13th International Symposium on Mining and Web (MAW-2020)
- The 13th International Workshop on Bio and Intelligent Computing (BICoM-2020)
- The 13th International Workshop on Telecommunication Networking, Applications and Systems (TeNAS-2020)
- The 11th International Workshop on Disaster and Emergency Information Network Systems (IWDENS-2020)
- The 8th International Workshop on Collaborative Emerging Systems (COLLABES-2020)
- The 8th International Workshop on Cloud Computing Project and Initiatives (CCPI-2020)
- The 7th International Workshop on Privacy and Security Intricacies on the Web (INTRICATE-SEC-2020)
- The 7th International Workshop on Energy-Aware Systems, Communications and Security (EASyCoSe-2020)
- The 6th International Workshop on Engineering Energy Efficient Internet Worked Smart sensors (E3WSN-2020)
- The 5th International Workshop on Big Data Processing in Online Social Network (BOSON-2020)
- The 3rd International Workshop on Internet of Everything and Machine Learning Applications (IOEMLA-2020)
- The 2nd International Workshop on Multi-Clouds and Mobile Edge Computing (M2EC-2020)
- The 2nd Workshop on Artificial Intelligence and Machine Learning (AIMAL-2020)
- The 2nd International Workshop on Intelligent Computing and Measurements (InCM-2020)
- The 1st International Workshop on Smart and Sustainable Mobility (SSUM-2020)

We would like to thank the community for their great response to AINA-2020 workshops. The excellent technical program of the workshops was the result of a professional work from workshop chairs, workshop program committees, reviewers, and authors.

We would like to give our special thanks to Prof. Makoto Takizawa and Prof. Leonard Barolli, the Steering Committee Chairs of AINA International Conference for their strong encouragement and guidance to organize the AINA 2020 workshops and symposiums. We would like to thank AINA-2020 General Co-chairs their advices to make possible organization of AINA-2020 workshops and symposiums. We are thankful to AINA-2020 Program Co-chairs for their support and help to prepare the technical program of AINA-2020 workshops and symposiums.

We wish all of you entertaining and rewarding experience in all workshops and AINA-2020 International Conference.

#### AINA-2020 Workshops Co-Chairs

**Tomoya Enokido**, Risho University, Japan  
**Leonardo Mostarda**, Camerino University, Italy  
**Kin Fun Li**, University of Victoria, Canada



## AINA-2020 Keynote Talk I



**Prof. Paul Krause, University of Surrey, United Kingdom**

### **Information Networks and Ecological Networks**

**Abstract:** The Internet of Things, Edge and Cloud computing all have important contributions to make to a wide range of application areas. We are seeing much talk about their application to Smart Cities, healthcare and Industry IV, for example. However, there is one area where they have potential to help catalyse a significant, and much needed transformation. That is agriculture. We are, of course, seeing projects on precision agriculture with useful reductions in seed, fertiliser, pesticide and herbicide wastage. But we can do better than that; much, much better. A body of theoretical and empirical studies around the world is now showing that if agricultural practitioners work with natural processes to build both above and below ground biodiversity, then this can enhance the provision of ecosystem services that help to capture soil organic carbon, recycle trace elements and the core NPK needs, encourage predators of weed seeds, and more. The term ecological engineering is now becoming current to encapsulate a methodology by which agriculture could be transformed away from a net contributor to greenhouse gas emissions, groundwater pollution and disruption of social cohesion in rural communities. Instead, it could become a major vehicle for carbon capture and storage, and provision of clean and safe drinking water, whilst maintaining yields, enhancing the quality of food and increasing employment opportunities in rural areas. Facilitating this will need important contributions from the AINA community. This talk will provide an overview of what can be done now, and what is still needed in order to provide real time monitoring of agroecosystems to support the transition of global agriculture into a scientifically managed and sustainable system.

## AINA-2020 Keynote Talk II



**Prof. Letizia Tanca, Polytechnic University of Milan, Italy**

### **Ethics and Data Quality: An Imperative Marriage**

**Abstract:** Data quality is a typical ethical requirement: we could never trust a piece of information if it did not have the typical data quality properties. Yet, we can also assert the opposite: that data should conform to a high ethical standard, for it to be considered of good quality. Hence, the satisfaction of the ethical requirements is actually necessary to assert the quality of a dataset, and this talk proposes to introduce explicitly the most common ethical requirements as dimensions of quality, grouped within an Ethics Cluster. We discuss the dimensions of ethics in connection with the various phases of what we call the information extraction process: (i) identifying the data sources containing the information of interest, (ii) collecting the corresponding data and integrating them in order to produce a unique dataset, and (iii) applying the appropriate information extraction methods (from the application of a simple query up to a complex statistical, machine learning or data mining analysis).



## **AINA-2020 Main Conference and Workshops Program**

**Wednesday, April 15, 2020**

**08:00 Registration**

**09:00-10:00 Single Session: Opening and Keynote Talk I**

### **AINA-2020 Keynote Talk I (Plenary Room)**

Prof. Paul Krause, University of Surrey, United Kingdom

Title: Information Networks and Ecological Networks

**10:00-10:30 Coffee Break**

**10:30-12:30 Parallel Sessions**

### **AINA-S1: Security Analysis and Secure Multimedia Systems**

**Chair: Isaac Woungang, Ryerson University, Canada**

1. Comparative Analysis of Japan and the US Cybersecurity Related Newspaper Articles: A Content and Sentiment Analysis Approach  
*Piyush Ghasiya, Koji Okamura*
2. Analysis of the Relationship between Psychological Manipulation Techniques and Both Personality Factors and Behavioral Characteristics in Targeted Email  
*Kota Uehara, Hiroki Nishikawa, Takumi Yamamoto, Kiyoto Kawauchi, Masakatsu Nishigaki*
3. Network Forensics of WhatsApp: A Practical Approach based on Side-channel Analysis  
*Gianluca De Luca Fiscone, Raffaele Pizzolante, Arcangelo Castiglione, Francesco Palmieri*
4. Trust-based Human-Machine Collaboration Mechanism for Predicting Crimes  
*Davinder Kaur, Suleyman Uslu, Arjan Durrezi, George Mohler, Jeremy G. Carter*
5. A Self-Learning Personal Privacy Assistant  
*Mounika Kasaraneni, Johnson P Thomas*
6. A RSA-Biometric based User Authentication Scheme for Smart Homes using Smartphones  
*Amir Mohammadi Bagha, Isaac Woungang, Sanjay Kumar Dhurandher, Issa Traore*

**AINA-S2: Network Protocols and Applications I****Chair: Lidia Ogiela, Pedagogical University of Krakow, Poland**

1. Constructing Balanced, Conflict-minimal, Overlap-fair Channel Sensing Schedules  
*Paulo Aragao, Reinhard Gotzhein*
2. Investigation into MPI all-reduce Performance in a Distributed Cluster with Consideration of Imbalanced Process Arrival Patterns  
*Jerzy Proficz, Piotr Sumionka, Jarosław Skomial, Marcin Semeniuk, Karol Niedzielewski, Maciej Walczak*
3. Enabling Multi-Domain and End-to-End Slice Orchestration for Virtualization Everything Functions (VxFs)  
*Rodrigo Moreira, Pedro Frosi Rosa, Rui Luis Andrade Aguiar, Flavio de Oliveira Silva*
4. A Bottom-up Approach for Extracting Network Intents  
*Rafael Hengen Ribeiro, Arthur Selle Jacobs, Ricardo Parizotto, Luciano Zembruksi, Alberto Egon Schaeffer-Filho, Lisandro Zambenedetti Granville*
5. Anycast Mac Protocol with Advanced Preamble for Wireless Sensor Networks  
*João Carlos Giacomini, Gustavo Figueiredo Araújo, Tales Heimfarth*
6. Transformative Computing for Distributed Services Management Protocols  
*Lidia Ogiela, Makoto Takizawa, Urszula Ogiela*

**AINA-S3: Deep Learning and Machine Learning Techniques****Chair: Fang-Yie Leu, Tunghai University, Taiwan**

1. Dynamic Routing and Bandwidth Provision based on Reinforcement Learning in SDN Networks  
*Yi-Hsun Lu, Fang-Yie Leu*
2. An Enhanced Convolutional Neural Network Model based on Weather Parameters for Short-term Electricity Supply and Demand  
*Zeeshan Aslam, Nadeem Javaid, Muhammad Adil, Muhammad Tariq Ijaz, Atta ur Rahman, Mohsin Ahmed*
3. Machine Learning-based regression models for Price Prediction in the Container Shipping Industry: Case Study of Australia-Asia, Oceania Trade Lane  
*Ayesha Ubaid, Farookh Khadeer Hussain, Jon Charles*
4. Machine Learning based Data Reduction in WSN for Smart Agriculture  
*Christian Salim, Nathalie Mitton*
5. Animal Species Recognition Using Deep Learning  
*Mai Ibraheem, Fayeze Gebali, Kin Fun Li, Leonard Sielecki*
6. DeepScheduling: Grid Computing Job Scheduler based on Deep Reinforcement Learning  
*Lucas C. Casagrande, Guilherme P. Koslovski, Charles C. Miers, Maurício A. Pillon*

**AINA-S4: Distributed and Parallel Computing****Chair: Naohiro Hayashibara, Kyoto Sangyo University, Japan**

1. DALC: Distributed Automatic LSTM Customization for Fine-Grained Traffic Speed Prediction  
*Ming-Chang Lee, Jia-Chun Lin*
2. Better User Clustering Scheme in Distributed NOMA Systems  
*Salifou Mounchili, Soumaya Hamouda*
3. Budgeted Constrained Coverage on Series-Parallel Multi-Interface Networks  
*Alessandro Aloisio, Alfredo Navarra*
4. Performance Evaluation of Nomadic Lévy Walk on Unit Disk Graphs using Hierarchical Clustering  
*Koichiro Sugihara, Naohiro Hayashibara*
5. SSR: A Stall Scheme Reducing Bubbles in Load-Use Hazard of RISC-V Pipeline  
*Dongchu Su, Yong Li, Bo Yuan*

6. A Mini-Review: Conventional and Metaheuristic Optimization Methods for the Solution of Optimal Power Flow (OPF) Problem  
*Zia Ullah, M.R. Elkadeem, Shaorong Wang, Muhammad Azam, Khdiya Shaheen, Mehmood Hussain, Muhammad Rizwan*

### **FINA-S1: IoT and Cloud Computing**

**Chair: Makoto Takizawa, Hosei University, Japan**

1. Concept of the Cloud Type Virtual Policy based Network Management Scheme for the Whole Internet  
*Kazuya Odagiri, Shogo Shimizu, Naohiro Ishii*
2. Atomicity in the Internet of Transactional Things (Io2T)  
*Zakaria Maamar, Mohamed Sellami, Thar Baker, Said Elnaffar, and Maj Alshibly*
3. A Survey on Vehicular Fog Computing: Motivation, Architectures, Taxonomy, and Issues  
*Tesnim Mekki, Issam Jabri, Lamia Chaari, and Abderrezak Rachedi*
4. Secure Public Storage Auditing Protocol for Privacy-preserving Fog-to-Cloud Computing  
*Zhao Kaiyang, Wang Xu An, Liu Yao, Liu Jiasen, Zhao Songyin*
5. A Machine to Machine Framework for the Charging of Electric Autonomous Vehicles  
*Ziyad Elbanna, Ilya Afanasyev, Luiz Jonatã Pires de Araújo, Rasheed Hussain, Mansur Khazeev, Joseph Lamptey, Manuel Mazzara, Swati Megha, Diksha Moolchandani, and Dragos Strugar*
6. Toward Scalable Blockchain for Data Management in VANETs  
*El-hacen Diallo, Khaldoun Al Agha, Omar DIB, Alexandre Laube, and Hafedh Mohamed Babou*

### **SSUM-S1: Smart and Sustainable Mobility I**

**Chair: Beniamino Di Martino, University of Campania Luigi Vanvitelli, Italy**

1. GreenCharge Simulation Tool  
*Rocco Aversa, Dario Branco, Beniamino Di Martino, Salvatore Venticinque*
2. Infrastructure Access Policies to Promote Sustainable Driving Behaviours in Railway Contexts  
*Marilisa Botte, Ilaria Tufano, and Luca D'Acerno*
3. The Effects of Accessibility on the Location of Manufacturing Companies: The Italian Case Study  
*Mariano Gallo, Mario Marinelli, Ivan Cavauiolo*
4. Towards e-Mobility: Strengths and Weaknesses of Electric Vehicles  
*Armando Carteni, Ilaria Henke, Clorinda Moliterno, Assunta Errico*

### **HWISE-S1: Mobile Communication Systems and Networking**

**Chair: Christos Bouras, University of Patras, Greece**

1. A Constructive Review Regarding the Significance of 5G Networks for the Internet of Things  
*Razvan Bocu*
2. Efficient Mechanism of eNB Bandwidth in D2D Communication in 5G  
*Eirini Barri and Christos Bouras*
3. Indoor Mobile Localization Using Wireless Sensor Networks (WSNs)  
*M. Hamza Bin Waheed, Rao Naveed Bin Rais, Hassan Khan, Mukhtiar Bano, Syed Sherjeel A. Gilani*
4. ESDNHybridMesh: A Hybrid Routing Architecture for SDN based Wireless Mesh Networks  
*Mukhtiar Bano, Rao Naveed Bin Rais, Syed Sherjeel A. Gilani, Amir Qayyum*

**INTRICATE-SEC-S1: Blockchain and IoT Security****Chair: Anne Kayem, Hasso-Plattner-Institute, Germany**

1. An Enhanced Blockchain-based Data Management Scheme for Microgrids  
*Bacem Mbarek, Stanislav Chren, Bruno Rossi, Tomás Pitner*
2. A Survey of Blockchain-based Solutions for Energy Industry  
*Swati Megha, Joseph Lamptey, Hamza Mohamed Salem, and Manuel Mazzara*
3. A2ISDIoT : Artificial Intelligent Intrusion Detection System for Software Defined IoT Networks  
*Hadda Ben Elhadj, Rihab Jmal, Hajer Chellig, lamia Chaari Fourati*
4. Control of DoS Attacks During Merging Process Over the Internet of Things  
*Albandari Alsumayt*

**12:30-14:00 Lunch Break****14:00-16:00 Parallel Sessions****AINA-S5: Secure Systems for Food and e-Health****Chair: Marek R. Ogiela, AGH University of Science and Technology, Poland**

1. Blockchain-based Reputation System in Agri-Food Supply Chain  
*Affaf Shahid, Umair Sarfraz, Muhammad Waseem Malik, Muhammad Sohaib Iftikhar, Abid Jamal, Nadeem Javaid*
2. Trust-based Decision Making for Food-Energy-Water Actors  
*Suleyman Uslu, Davinder Kaur, Samuel J Rivera, Arjan Duresi, Meghna Babbar-Sebens*
3. Dynamic Hierarchical Security Access Control with Time-limited Method in Electronic Medical Record  
*Kuang-Yen Tai, Tzer-Shyong Chen, Frank Yeong-Sung Lin, Po-Min Huang, Jing-Chen Tu*
4. Micro Biometric Authentication Using Fingernail Surfaces: A Study of Practical Use  
*Yuya Shiomi, Genki Sugimoto, Ayaka Sugimoto, Kota Uehara, Masahiro Fujita, Yuto Mano, Tetsushi Ohki, Masakatsu Nishigaki*
5. A Secure Distributed e-Health System for the Management of Personal Health Metrics Data  
*Razvan Bocu*
6. Eye Tracking Technology in Personal Authentication Protocols  
*Marek R. Ogiela, Lidia Ogiela*

**AINA-S6: Network Protocols and Applications II****Chair: Lisandro Zambenedetti Granville, Federal University of Rio Grande do Sul, Brazil**

1. dnstracker: Measuring Centralization of DNS Infrastructure in the Wild  
*Luciano Zembruzki, Arthur Selle Jacobs, Gustavo Spier Landtreter, Lisandro Zambenedetti Granville, Giovane C. M. Moura*
2. Classification of Encrypted Internet Traffic Using Kullback-Leibler Divergence and Euclidean Distance  
*Vanice Canuto Cunha, Arturo A. Z. Zavala, Pedro R. M. Inácio, Damien Magoni, Mario M. Freire*
3. Facing the Unknown: a Stream Learning Intrusion Detection System for Reliable Model Updates  
*Eduardo K. Viegas, Altair O. Santin, Vinicius V. Cogo, Vilmar Abreu*
4. Efficient Distributed D2D ProSe-based Service Discovery and Querying in Disaster Situations  
*Sami Abdellatif, Okba Tibermacine, Walid Bechkit, Abdelmalik Bachir*

5. Micro-service based Network Management for Distributed Applications  
*Rafael de Jesus Martins, Rodolfo B. Hecht, Ederson Ribas Machado, Jéferson Campos Nobre, Juliano Araujo Wickboldt, Lisandro Zambenedetti Granville*
6. ITMN: A New MAC Protocol for Improving Throughput of Multihop Wireless Networks Considering Number of Neighbor Nodes  
*Taiki Morita, Xuejun Tian, Takashi Okuda*

### **AINA-S7: Intelligent Algorithms and Systems**

**Chair: Donald Elmazi, Fukuoka Institute of Technology, Japan**

1. A Fuzzy Decision Tree based Tasks Orchestration Algorithm for Edge Computing Environments  
*Charafeddine Mechali, Hajer Taktak, Faouzi Moussa*
2. Dynamic User Interests Profiling using Fuzzy Logic Application  
*Abd El Heq Silem, Hajer Taktak, Faouzi Moussa*
3. On Scheduling Transaction in Grid Processing System considering Load using Fuzzy Ant Colony Optimization  
*Dharmendra Prasad Mahato*
4. Performance Evaluation of WMNs by WMN-PSOHC Hybrid Simulation System Considering CM and LDVM Replacement Methods  
*Shinji Sakamoto, Seiji Ohara, Leonard Barolli, Shusuke Okamoto*
5. Effect of Task Accomplishment for Actor Node Selection in WSANs: Performance Evaluation and a Comparison Study  
*Donald Elmazi, Miralda Cuka, Makoto Ikeda, Keita Matsuo, Leonard Barolli, Makoto Takizawa*
6. Ant Colony Optimization Algorithm for Split Delivery Vehicle Routing Problem  
*Joanna Ochelska-Mierzejewska*

### **AINA-S8: Prediction and Detection Systems**

**Chair: Fatos Xhafa, Technical University of Catalonia, Spain**

1. A Flexible and Interpretable Framework for Predicting Anomalous Behavior in Industry 4.0 Environments  
*Rocco Langone, Alfredo Cuzzocrea, Nikolaos Skantzos*
2. Adaptive Multi-agent-based Alert System for Diseases' Detection  
*Ibtihel Selmi, Nadia Kabachi, Sana Ben Abdallah, Chirine Ghedira Guegan, Hajer Baazaoui*
3. Incentive Mechanism for Mobile Crowdsensing in Spatial Information Prediction Using Machine Learning  
*Ryoichi Shinkuma, Rieko Takagi, Yuichi Inagaki, Eiji Oki, Fatos Xhafa*
4. Detection of Users' Abnormal Behavior on Social Networks  
*Nour El Houda Ben Chaabene, Amel Bouzeghoub, Ramzi Guetari, Samar Balti, Henda Hajjami Ben Ghezala*
5. RePAD: Real-time Proactive Anomaly Detection for Time Series  
*Ming-Chang Lee, Jia-Chun Lin, Ernst Gunnar Gran*
6. Anomaly Detection and Extra Tree Regression for Assessment of the Remaining Useful Life of Lithium-ion Battery  
*Chinedu I. Ossai, Ifeanyi P. Ekwutuoha*

### **FINA-S2: Multimedia and Ontology-based Systems**

**Chair: Tomoya Enokido, Rissho University, Japan**

1. Design of an Ontology-oriented Hand Rehabilitation Service Platform for Rheumatoid Arthritis Patients  
*Hao-Hsiang Ku*
2. A Review Towards the Development of Ontology based Identity and Access Management Metamodel  
*Kamrun Nahar, Asif Qumer Gill*

3. Educational Microclimate Mesonet System Design  
*James. Robertson, Jianhua Yang, W. Scott Gunter, Peter Keres, Thomas Wingate, Anthony Obando*
4. Design and Development of A New Tea-making Ecosystem  
*Qian Du, Bo Zhang, Jiuru Wang, Wenyin Zhang, Weifa Liu*
5. Linear Approximation based Compression Algorithms Efficiency to Compress Environmental Data Sets  
*Olli Väänänen, Mikhail Zolotukhin and Timo Hämäläinen*
6. Textual Statistics and Named Entity Recognition Applied to Game of Thrones Novels  
*Annibale Elia and Alessandro Maisto and Giandomenico Martorelli and Serena Pelosi and Pierluigi Vitale*

## **SSUM-S2: Smart and Sustainable Mobility II**

**Chair: Salvatore Venticinquè, University of Campania "Luigi Vanvitelli", Italy**

1. An Event-Driven Multi Agent System for Scalable Traffic Optimization  
*Geir Horn, Tomasz Przeździecki, Monika Büscher, Salvatore Venticinquè, Rocco Aversa, Beniamino Di Martino, Antonio Esposito, Pawel Skrzypek, and Mark Leznik*
2. Stakeholder Motivation Analysis for Smart and Green Charging for Electric Mobility  
*Marit Natvig, Shanshan Jiang and Svein Hallsteinsen*
3. Simulation Experiments for an Approximate Definition of the Macroscopic Fundamental Diagram  
*Luigi Pariota, Luca Di Costanzo, Francesco Spera and Gennaro Nicola Bifulco*
4. Behavioral Clustering: a New Approach for Traffic Congestion Evaluation  
*Walter Balzano, Aniello Murano, Loredana Sorrentino and Silvia Stranieri*

## **HWISE-S2: Next Generation Networks**

**Chair: Leonard Barolli, Fukuoka Institute of Technology, Japan**

1. Blockchain in WSNs, VANets, IoTs and Healthcare: A Survey  
*Fatima Tariq, Maria Anwar, Abdul Rehman Janjua, Muhammad Haseeb Khan, Asad Ullah Khan, and Nadeem Javaid*
2. Routing Protocol LEACH-K using K-Means Algorithm in Wireless Sensor Network  
*Rahma Gantassi, Bechir Ben Gouissem, Jalel Ben Othmen*
3. A Blockchain based Distributed Vehicular Network Architecture for Smart Cities  
*Mubariz Rehman, Zahoor Ali Khan, Muhammad Umar Javed, Muhammad Zohaib Iftikhar, Usman Majeed, Imam Bux, and Nadeem Javaid*
4. Performance Evaluation of a Message Relaying Method with Enhanced Dynamic Timer in Vehicular DTN  
*Makoto Ikeda, Shogo Nakasaki, Yoshiki Tada and Leonard Barolli*
5. Performance Evaluation of Routing Protocols for Vehicular AD-HOC Networks using NS2/SUMO  
*Dardouri Soumaya, Dardouri Samia, Ridha Bouallegue*

## **INTRICATE-SEC-S2: Secure Systems and Tools**

**Chair: Anne Kayem, Hasso-Plattner-Institute, Germany**

1. Examination of Defense Method for Tor User Specific Purpose Attacks by Dummy User Attached Communication  
*Motoharu Takahashi, Masaki Narita, Toshimitsu Inomata, Eiji Sugino*
2. On Security Information Interaction Model of Smart Grid Emergency System  
*Linhua Ding, Jiuru Wang, Yingkui Li, Wenyin Zhang*
3. Colluding Android Apps Detection via Model Checking  
*Rosangela Casolare, Fabio Martinelli, Francesco Mercaldo, Vittoria Nardone, and Antonella Santone*
4. A Searchable Encryption Scheme based on Elliptic Curves  
*Stefania Loredana Nita and Marius Iulian Mihailescu*



5. Evaluation of Yubimoji based Gestures for Realizing User Authentication Method Using s-EMG  
*Hisaaki Yamaba, Yuki Nagatomo, Shotaro Usuzaki, Kayoko Takatsuka, Kentaro Aburada, Tetsuro Katayama, Mirang Park, Naonobu Okazaki*

### **16:00-16:30 Coffee Break**

### **16:30-18:30 Parallel Sessions**

#### **AINA-S9: Attack Modeling and Intrusion Detection**

**Chair: Aneta Poniszewska-Marañda, Lodz University of Technology, Poland**

1. An Improved Fast Correlation Attack on Fruit-80  
*Chunlan Zhang, Lihua Dong*
2. Security Measures in Vehicular Ad-Hoc Networks on the Example of Bogus and Sybil Attacks  
*Krzysztof Stepień and Aneta Poniszewska-Marañda*
3. New Programmable Data Plane Architecture based on P4 OpenFlow Agent  
*Ranyelson N. Carvalho, Lucas R. Costa, Jacir L. Bordim, Eduardo A. P. Alchieri*
4. A Framework for Classifying Web attacks While Respecting ML Requirements  
*Nourhène Ben Rabah, Ines Ben Tekaya*
5. A Long-lasting Reinforcement Learning Intrusion Detection Model  
*Roger Robson dos Santos, Eduardo Kugler Viegas, Altair Santin, Vinicius Vielmo Cogo*
6. Intrusion Detection using ASTDs  
*Lionel N. Tidjon, Marc Frappier, Amel Mammar*

#### **AINA-S10: Network Protocols and Applications III**

**Chair: Flavio de Oliveira Silva, Federal University of Uberlândia, Brazil**

1. Self-balanced IPv4-IPv6 Lossless Translators with Dynamic Addresses Mapping  
*Giovanni Bembo, Francesco Lo Presti*
2. Sample Selection Search to Predict Elephant Flows in IXP Programmable Networks  
*Marcus Vinicius Brito da Silva, André Augusto Pacheco de Carvalho, Arthur Selle Jacobs, Ricardo José Pfitscher, Lisandro Zambenedetti Granville*
3. CUSCO: A Customizable Solution for NFV Composition  
*Vinicius Fulber-Garcia, Marcelo Caggiani Luizelli, Carlos R. Paula dos Santos, Elias P. Duarte Jr.*
4. A Heuristic Approach for Large-Scale Orchestration of the In-Band Data Plane Telemetry Problem  
*Rumenigüe Hohemberger, Arthur Francisco Lorenzon, Fábio Diniz Rossi, Marcelo Caggiani Luizelli*
5. VNF-DOC: A Dynamic Overload Controller for Virtualized Network Functions in Cloud  
*Sudhakar Murugasen, Shankar Raman, Kamakoti V*
6. Future Internet Exchange Point (FIXP): Enabling Future Internet Architectures Interconnection  
*Jose Gavazza, Juliano Melo, Thiago Silva, Antonio M Alberti, Pedro Frosi Rosa, Flavio de Oliveira Silva, Fábio Luciano Verdi, Jose Augusto Suruagy Monteiro*

**AINA-S11: Internet of Things Applications****Chair: Miralda Cuka, Fukuoka Institute of Technology, Japan**

1. A Model-Driven Approach to Unravel the Interoperability Problem of the Internet of Things  
*Imad Berrouyne, Mehdi Adda, Jean-Marie Mottu, Jean-Claude Royer, Massimo Tisi*
2. Towards an Approach for Validating the Internet-of-Transactional-Things  
*Zakaria Maamar, Mohamed Sellami, Nanjangud C. Narendra, Ikbel Guidara, Emir Ugljanin, Bitu Banihashemi*
3. Identity and Access Management for IoT in Smart Grid  
*Vilmar Abreu, Altair O. Santin, Eduardo K. Viegas, Vinicius V. Cogo*
4. Information Centric Protocols to Overcome the Limitations of Group Communication in the IoT  
*Rosana Lachowski, Marcelo E. Pellenz, Edgard Jamhour, Manoel C. Penna, Guilherme Moritz, Glauber Brante, Richard D. Souza*
5. Architecture for Visualizing Indoor Air Quality Data with Augmented Reality based Cognitive Internet of Things  
*Mohamed Saifeddine Hadj Sassi, Lamia Chaari Fourati*
6. A Fuzzy based Simulation System for IoT Node Selection in an Opportunistic Network Considering IoT Node's Unique Encounters as a New Parameter  
*Miralda Cuka, Donald Elmazi, Keita Matsuo, Makoto Ikeda, Makoto Takizawa, Leonard Barolli*

**AINA-S12: Mobile Computing****Chair: Leonard Barolli, Fukuoka Institute of Technology, Japan**

1. Investigating Feature Selection for Predicting the Number of Bus Passengers by Monitoring Wi-Fi Signal Activity from Mobile Devices  
*Thongtat Oransirikul, Hideyuki Takada*
2. Impact of Road Gradient on Electric Vehicle Energy Consumption in Real-World Driving  
*Insaf Sagaama, Amine Kchiche, Wassim Trojet, Farouk Kamoun*
3. On the Regression and Assimilation for Air Quality Mapping using Dense Low-cost WSN  
*Mohamed Anis Fekih, Ichrak Mokhtari, Walid Bechkit, Yasmine Belbaki, Hervé Rivano*
4. On the Impact of Delays on Control Packets of Routing Algorithms and Mitigation Strategies for Wireless Ad-hoc Networks  
*Pratik Kumar Sinha, Subhrabrata Choudhury, Animesh Dutta*
5. Performance Evaluation of WMNs Using WMN-PSOHC-DGA Considering LDVM and RDVM Replacement Methods  
*Admir Barolli, Seiji Ohara, Shinji Sakamoto, Makoto Takizawa, Leonard Barolli*
6. Multi-objective Priority based Heuristic Optimization for Region Coverage with UAVs  
*Kemal Ihsan Kilic, Orhan Gemikonakli, Leonardo Mostarda*

**FINA-S3: Secure Systems and Network Design****Chair: Hiroyoshi Miwa, Kwansei Gakuin University, Japan**

1. Bitcoin Data Analytics: Exploring Research Avenues and Implementing a Hadoop-based Analytics Framework  
*Raj Sanjay Shah and Ashutosh Bhatia*
2. Toward Enforcing Security in Smart Homes Using a Trust-based Scheme  
*Bacem Mbarek, Nafaa Jabeur, Tomás Pitner*
3. Intrusion Detection based on Cluster Analysis and Nonsymmetric Autoencoder  
*Junke Nie, Wang Xu An, Yang Su, Bo Wang*
4. A Taxonomy of Trust Models for Attribute Assurance in Identity Management  
*Andreas Grüner, Alexander Mühle, Michael Meinig and Christoph Meinel*

5. Efficient Method for Link Protection under Multiple Constraints using ZDD  
*Masataka Akasaka and Hiroyoshi Miwa*
6. Infrared Image Fault Identification of Power Equipment based on Residual Network  
*Fangrong Zhou, Yi Ma, Yutang Ma, Hao Pan*

### **CCPI-S1: Cloud Computing Project and Initiatives**

**Chair: Beniamino Di Martino, University of Campania "Luigi Vanvitelli", Italy**

1. 2L-ZED-IDS: a Two-Level Anomaly Detector for Multiple Attack Classes  
*Marta Catillo, Massimiliano Rak and Umberto Villano*
2. Digital Divide vs e-Government: Analyzing Italian Public Service  
*Alfonso Marino, Paolo Pariso*
3. An Ontology for OASIS TOSCA  
*Beniamino Di Martino, Antonio Esposito, Stefania Nacchia, Salvatore Augusto Maisto, Uwe Breitenbücher*
4. Unconventional Usage of a Web-based Survey: Gathering Quality Data for Green Awareness in Lawmaking  
*Giuseppe Ferretti, Gianluigi Renzi*
5. A Security-Oriented Architecture for Federated Learning in Cloud Environments  
*Fiammetta Marulli, Emanuele Bellini, Stefano Marrone*

### **IWDENS-S1: Disaster Information Networking and Applications**

**Chair: Yoshitaka Shibata, Iwate Prefectural University, Japan**

1. Proposal of a Self-Help Support System in a Mega Disaster  
*Yudai Taniguchi, Tomoyuki Ishida, Noriki Uchida, Yoshitaka Shibata*
2. Road State Information Platform for Automotive EV in Snow Country  
*Yoshitaka Shibata, Akira Sakuraba, Yoshikazu Arai, Yoshia Saito, Jun Hakura*
3. Social Experimental Evaluation of Road State Information System in Snow Country  
*Akira Sakuraba, Yoshitaka Shibata, Goshi Sato, Noriki Uchida, Toshihiro Tamura*
4. Static Body Detecting Methods by Locational and Rotational Sensors on Smartphone for DTN based Disaster Information System  
*Noriki Uchida, Misaki Fukumoto, Tomoyuki Ishida, Yoshitaka Shibata*

### **M2EC-S1: Cloud and Edge Computing**

**Chair: Thomas Dreibholz, Simula Metropolitan Centre for Digital Engineering, Norway**

1. A Security and Privacy-Preserving Path for Enhancing Information Systems that Manage Cross-Cloud Applications  
*Yiannis Verginadis, Ioannis Patiniotakis, Marcin Prusinski, Marta Rozanska, Sebastian Schork, Gregoris Mentzas*
2. A Context-aware Security Model for a Combination of Attribute-based Access Control and Attribute-based Encryption in the Healthcare Domain  
*Evgenia Psarra, Yiannis Verginadis, Ioannis Patiniotakis, Dimitris Apostolou, Gregoris Mentzas*
3. Flexible 4G/5G Testbed Setup for Mobile Edge Computing using OPENAIRINTERFACE and OPEN SOURCE MANO  
*Thomas Dreibholz*
4. Spreading the Heat: Multi-cloud Controller for Failover and Cross-site Offloading  
*Simon Kollberg, Ewnetu Bayuh Lakew, Petter Sv'ard, Erik Elmroth, Johan Tordsson*

**19:00-21:00 Welcome Reception Party**

- Location: TBA
- Address: TBA

**Thursday, April 16, 2020****08:00 Registration****09:00-10:00 Single Session: Keynote Talk II****AINA-2020 Keynote Talk II (Plenary Room)**

Prof. Letizia Tanca, Polytechnic University of Milan, Italy

Ethics and Data Quality: An Imperative Marriage

**10:00-10:30 Coffee Break****10:30-12:30 Parallel Sessions****AINA-S13: Access Control and Detection Systems****Chair: Francesco Palmieri, University of Salerno, Italy**

1. Context-Aware and Dynamic Role-based Access Control Using Blockchain  
*Mohsin Ur Rahman, Barbara Guidi, Fabrizio Baiardi, Laura Ricci*
2. Leveraging Fine-grained Access Control in Blockchain-based Healthcare System  
*Fatima Tariq, Zahoor Ali Khan, Tanzeela Sultana, Mubariz Rehman, Qaiser Shahzad, Nadeem Javaid*
3. On the File Recovery in Systems Infected by Ransomware  
*Raffaele D'Arco, Raffaele Pizzolante, Arcangelo Castiglione, Francesco Palmieri*
4. Code Reordering Obfuscation Technique Detection by means of Weak Bisimulation  
*Giuseppe Crincoli, Tiziano Marinaro, Fabio Martinelli, Francesco Mercaldo, Antonella Santone*
5. Using Four Modalities for Malware Detection based on Feature Level and Decision Level Fusion  
*Jarilyn M. Hernández Jiménez, Katerina Goseva-Popstojanova*

**AINA-S14: Multimedia Systems and Applications****Chair: Markus Aleksy, ABB Corporate Research Center, Germany**

1. Implementing the Cognition Level for Industry 4.0 by Integrating Augmented Reality and Manufacturing Execution Systems  
*Alfonso Di Pace, Giuseppe Fenza, Mariacristina Gallo, Vincenzo Loia, Aldo Meglio, Francesco Orciuoli*
2. TF-BiLSTMS2S: A Chinese Text Summarization Model  
*Caiquan Xiong, Zhuang Wang, Li Shen, Na Deng*
3. Benchmarking Predictive Models in Electronic Health Records: Sepsis Length of Stay Prediction  
*Belal Alsinglawi, Fady Alnajjar, Omar Mubin, Mauricio Novoa, Ola Karajeh, Omar Darwish*
4. Ensuring the Practical Applicability of Algorithms for User Behavior Modeling Through Integration Into Building Automation Systems  
*Markus Aleksy, Philipp Bauer*
5. An Experimental Study on Culturally Competent Robot for Smart Home Environment  
*Van Cu Pham, Yuto Lim, Ha-Duong Bui, Yasuo Tan, Nak Young Chong, Antonio Sgorbissa*
6. Blended Learning Course Design from the Perspective of Learning Powered by Technology-A Case Study on Computer Networking  
*Yuanyi Qi, Jianhua Yang, Yongzhong Zhang*

**AINA-S15: Wireless Networks and Communication Systems****Chair: Christos Bouras, University of Patras, Greece**

1. Offloading the Small Cells for Load Balancing in UDNs Using the Proactive and the User Transfer Algorithms with Reducing the APs Inter-Communications  
*Mohamad Salhani*
2. Weighted-Gain Beam Selection For BeamSpace MmWave Massive MIMO systems  
*Maroua Shili, Moufida Hajjaj, Mohamed Lassaad Ammari*
3. Techno-economic Analysis of MMWave vs Mid-Band Spectrum in 5G networks  
*Christos Bouras, Anastasia Kollia*
4. Improving spectrum usage on full-duplex communications with an innovative channel reservation  
*Lucas de Melo Guimarães, Jacir Luiz Bordim*
5. Implementing On-Chip Wireless Communication in Multi-stage interconnection NoCs  
*Sirine Mnejja, Yassine Aydi, Mohamed Abid, Salvatore Monteleone, Maurizio Palesi, Davide Patti*
6. Optimisation of the CSIT allocation size for Interference Alignment technique in Massive MIMO Networks  
*Hosni Manai, Larbi Ben Hadj Slama, Ridha Bouallegue*

**AINA-S16: Cloud and Fog Computing****Chair: Makoto Takizawa, Hosei University, Japan**

1. Cloud Resources Reassignment based on CPU and Bandwidth Correlation  
*Sergi Vila, Nilson Moraes, Fernando Guirado, Josep L. Lérida, Fernando Cores, Fábio L. Verdi*
2. Elixir: An Agent for Supporting Elasticity in Docker Swarm  
*Michail S. Alexiou, Euripides G.M. Petrakis*
3. A Distributed Decision Making Model For Cloudlets Network: A Fog To Cloud Computing Approach  
*Amel Ben Lazreg, Anis Ben Arabia, Habib Youssef*
4. A Multi-Criteria Decision Making Approach for Cloud-Fog Coordination  
*Fadwa Yahya, Zakaria Maamar, Khoulood Boukadi*
5. Mobile Fog Computing Model of a Topic-based Publish/Subscribe System  
*Takumi Saito, Shigenari Nakamura, Tomoya Enokido, Makoto Takizawa*
6. Distributed Approach to Fog Computing with Auction Method  
*Yinze Guo, Takumi Saito, Ryuji Oma, Shigenari Nakamura, Tomoya Enokido, Makoto Takizawa*

**FINA-S4: Large Scale and Software Defined Networks****Chair: Flavio de Oliveira Silva, Federal University of Uberlândia, Brazil**

1. A New SDN Architecture based on Trust Management and Access Control for IoT  
*Nadia Kammoun, Ryma Abassi, Sihem Guemara El Fatmi and Mohamed Mosbah*
2. SDN-based Replication Management Framework for CCN Networks  
*Amna Fekih, Sonia Gaied Fantar, Habib Youssef*
3. Analysis and Performance Evaluation of Different Methods to Achieve Way-point Enforcement in Hybrid SDN  
*Sandhya Rathee, K Haribabu, Parth Patel, Ashutosh Bhatia, Ujjwal Gandhi*
4. ConForm: In-Band Control Flows Self-Establishment with Integrated Topology Discovery to SDN-based Networks  
*Marcelo Silva Freitas, Pedro Frosi Rosa, and Flavio de Oliveira Silva*
5. Deployment of NRF in The Docker and Kubernetes - based NFV Platform  
*Di Huang, Zhan Xu, Zhigang Tian*
6. Community Detection based on Social Influence in Large Scale Networks  
*Farhan Amin, Jin-Ghoo Choi, Gyu Sang Choi*

**BOSON-S1: Smart and Computing Methods****Chair: Flora Amato, University of Naples "Federico II", Italy**

1. Representing Knowledge on the European Small Claims Procedure  
*Antonino Ferraro and Marco Giacalone*
2. A Smart ChatBot for Specialist Domains  
*Roberto Canonico and Giovanni Cozzolino and Antonino Ferraro and Vincenzo Moscato and Antonio Picariello and Fabio Raimondo Sorrentino and Giancarlo Sperli*
3. Experiencing Museums A Qualitative and Quantitative Description about Igers' Narration of an Exhibit Space  
*Francesca Esposito, Mariacristina Falco, Pierluigi Vitale*
4. Smart Destination-based Parking for the Optimization of Waiting Time  
*Marco Balzano, Walter Balzano, Loredana Sorrentino and Silvia Stranieri*
5. Lectures Retrieval: Improving Students' e-Learning Process with a Search Engine based on ASR Model  
*Walter Balzano, Chiara Pellicchia, Marco Balzano*

**InCM-S1: Intelligent Computing and Measurements I****Chair: Ricardo Rodriguez-Jorge, Autonomous University of Ciudad Juarez, Mexico**

1. Citrus Brand Classification by CNN Considering Load and Sound  
*Shigeru Kato, Tomomichi Kagawa, Naoki Wada, Takanori Hino, and Hajime Nobuhara*
2. Design of Optimal PI Controllers using the Chemical Reaction Optimization Algorithm for Indirect Power Control of a DFIG model with MPPT  
*Cuong Nguyen Cong, Ricardo Rodriguez-Jorge, Nghien Nguyen Ba, Chuong Trinh Trong, Nghia Nguyen Anh*
3. Intelligent HTTP Request Distribution Strategies in One and Two-layer Architectures of Cloud-based Web Systems  
*Krzysztof Zatwarnicki*
4. Prediction of Load Time for Different Agent Locations and Browsers  
*Jolanta Wrzuszczak-Noga, Leszek Borzemski*

**IOEMLA-S1: Intelligent and Secure Systems****Chair: Omid Ameri Sianaki, Victoria University, Australia**

1. Survey of Educational Cyber Ranges  
*Omar Darwish, Christopher M. Stone, Ola Karajeh, and Belal Alsinglawi*
2. Detection and Mitigation of LFA Attack in SDN-IoT Network  
*Alaa Allakany, Geeta Yadav, Kolin Paul and Koji Okamura*
3. A Survey on VANETs Routing Protocols for IoT Intelligent Transportation Systems  
*Maede Fotros, Javad Rezazadeh, Omid Ameri Sianaki*
4. Efficient App based Smart Door lock System Using Bluetooth  
*Anderson B de Lima, Bibek Gurung, and Sardar M Farhad*
5. Reliable and Convenient Smart Light Control System Using Mobile App  
*Hamza Malik, Sabin Sapkota, and Sardar M Farhad*
6. A Survey on Privacy and Security in Mobile Cloud Computing  
*Anju Rana, Farshid Hajati*
7. Prevention of Cross-site Scripting Attacks in Web Applications  
*Mahmoud Elkhodr, Jay K. Patel, Mehregan Mahdavi, and Ergun Gide*

**12:30-14:00 Lunch Break****14:00-16:00 Parallel Sessions****AINA-S17: Secure Models and Systems****Chair: Isao Echizen, National Institute of Informatics, Japan**

1. Development of an Information Security Management Model for Enterprise Automated Systems  
*Thamer Alhussain, Ahmad Ali AlZubi, Osama AlFarraj, Salem Alkhalaf, Musab S. Alkhala*
2. An Event-B based Approach for Formal Modelling and Verification of Smart Contracts  
*Asma Lahbib, Abderrahim Ait Wakrime, Anis Laouiti, Khalifa Toumi, Steven Martin*
3. Generating Sentiment-Preserving Fake Online Reviews Using Neural Language Models and Their Human- and Machine-based Detection  
*David Ifeoluwa Adelani, Haotian Mai, Fuming Fang, Huy H. Nguyen, Junichi Yamagishi, Isao Echizen*
4. A Blockchain-based Secure Data Storage and Trading Model for Wireless Sensor Networks  
*Shahab Ali, Nadeem Javaid, Danish Javeed, Ijaz Ahmad, Anwar Ali, Umar Mohammed Badamasi*
5. A Universal Defense System based on Backtrace Canary for ELF against Vulnerabilities  
*Jingling Zhao, Congxiang Yu, Yunze Ni*
6. Greybox Fuzzing based on Ant Colony Algorithm  
*Bowen Sun, Bo Wang, Baojiang Cui, Yeqi Fu*

**AINA-S18: Agent and Semantic Computing****Chair: Flora Amato, University of Naples "Federico II", Italy**

1. Communication QoS-aware Navigation of Autonomous Robots for Effective Coordination  
*Amar Nath, Rajdeep Niyogi*
2. Semantic CPPS in Industry 4.0  
*Giuseppe Fenza, Mariacristina Gallo, Vincenzo Loia, Domenico Marino and Francesco Orciuoli, Alberto Volpe*
3. Semantically Oriented Idioms for Sentiment Analysis. A Linguistic Resource for the Italian Language  
*Serena Pelosi*
4. Keywords Co-occurrence Analysis to Map New Topics and Recent Trends in Social Research Methods  
*Maria Carmela Catone, Paolo Diana, Giuseppe Giordano*
5. Modeling the Chatbot Quality of Services (CQoS) Using Word Embedding to Intelligently Detect Inappropriate Responses  
*Ebtesam Hussain Almansor, Farookh Khadeer Hussain*
6. Narrative Knowledge Representation and Blockchain: A Symbiotic Relationship  
*Lyazid Sabri, Abdelhak Boubetra*

**AINA-S19: Distributed Database and Data Mining****Chair: Alfredo Cuzzocrea, University of Calabria, Italy**

1. A Secure and Distributed Control Plane for Software Defined Networks  
*Jefferson Pereira da Silva, Eduardo Alchieri, Jacir Bordim, Lucas Costa*
2. Efficiently Detecting Web Spambots in a Temporally Annotated Sequence  
*Hayam Alamro, Costas S. Iliopoulos, Grigorios Loukides*
3. Periodic Mining of Traffic Information in Industrial Control Networks  
*Jiahui Ni, Wenqing Yin, Yong Jiang, Jingling Zhao, Yiming Hu*



4. An Innovative Big Data Predictive Analytics Framework over Hybrid Big Data Sources with an Application for Disease Analytics  
*Joglas Souza, Carson K. Leung, Alfredo Cuzzocrea*
5. The Power Consumption Model of a Server to Perform Data Access Application Processes in Virtual Machine Environments  
*Tomoya Enokido, Makoto Takizawa*
6. Analysis of Human Vital Functions based on Data from Internet of Things Devices  
*Aneta Poniszewska-Marańda, Maciej Pluta*

#### **AINA-S20: Services Computing and Data Centers**

**Chair: Euripides G. M. Petrakis, Technical University of Crete (TUC), Greece**

1. Context-aware Service Composition with Functionally Equivalent Services for Complex User Requests  
*Sujata Swain, Rajdeep Niyogi*
2. iSWoT: Service Oriented Architecture in the Cloud for the Semantic Web of Things  
*Stelios Bottonakis, Aimilios Tzavaras, Euripides G.M. Petrakis*
3. Evaluation of SLA Negotiation for Personalized SDN Service Delivery  
*Shuraia Khan, Farookh Khadeer Hussain*
4. A QoS-based Service Chain Composition Approach for a Dynamic End-to-End Resource Allocation in NFV  
*Inès Raïssa Djouela Kamgang, Ghayet El Mouna Zhioua, Nabil Tabbane*
5. Data Center Resource Provisioning using Particle Swarm Optimization and Cuckoo Search: A Performance Comparison  
*Khaoula Braiki, Habib Youssef*

#### **E3WSN-S1: Wireless Networks and Energy Efficient Systems**

**Chair: Leonardo Mostarda, Camerino University, Italy**

1. Network Lifetime Efficiency based on Equal and Unequal Size Clustering Strategies  
*Zaib Ullah, Roberto Gagliardi, Orhan Gemikonakli, Fadi Al-Turjman*
2. Unequal Rotating Energy Efficient Clustering for Heterogeneous Devices (UREECHD)  
*Matteo Micheletti, Roberto Gagliardi, Fausto Marcantoni, Alessandro Aloisio*
3. On Building Networks with Limited Stretch Factor  
*Serafino Cicerone*
4. Coverage Subject to a Budget on Multi-Interface Networks with Bounded Carving-width  
*Alessandro Aloisio*
5. Optimal Cluster Head Rotation for Heterogeneous WSNs  
*Renato De Leone, Leonardo Mostarda*

#### **BOSON-S2: Big Data Analysis and Processing**

**Chair: Marco Giacalone, Vrije University Brussels & LSTS, Belgium**

1. Predicting Probability of Default under IFRS 9 through Data Mining Techniques  
*Fabio Martinelli, Francesco Mercaldo, Domenico Raucci, and Antonella Santone*
2. Analysis of Data for SCAN Project  
*Alessandra Amato and Marco Giacalone*
3. Data Management in the European Project SCAN  
*Alessandra Amato and Marco Giacalone*
4. Quality Control in the Process of Data Extraction  
*Alessandra Amato and Marco Giacalone*

**InCM-S2: Intelligent Computing and Measurements II****Chair: Jolanta Mizera-Pietraszko, Opole University, Poland**

1. Classification of Skin Lesions Shape Asymmetry using Machine Learning Methods  
*Piotr Milczarski, Zofia Stawska*
2. Robot Eye Perspective in Perceiving Facial Expressions in Interaction with Children with Autism  
*Agnieszka Landowska, Ben Robins*
3. Rough Set Theory for Optimization of Packet Management Mechanism in IP Routers  
*Jolanta Mizera-Pietraszko, Jolanta Tancula, Ireneusz Jozwiak*
4. Android Hook Detection based on Machine Learning and Dynamic Analysis  
*Michał Szczepanik, Ireneusz J. Józwiak, Piotr P. Józwiak, Michał Kędziora*
5. A New Region Growing Medical Image Segmentation Algorithm based on Interval Type-2 Fuzzy Sets  
*Martin Tabakov, Bartosz Jablonski*

**EASyCoSe-S1: Secure and Energy-Aware Systems****Chair: Mauro Migliardi, University of Padova, Italy**

1. Comparing API Call Sequence Algorithms for Malware Detection  
*Massimo Ficco*
2. Towards a SIP-based DDoS Attack to the 4G Network  
*Nicola Cibir, Meriem Guerar, Alessio Merlo, Mauro Migliardi, Luca Verderame*
3. AppIoTTE: An Architecture for the Security Assessment of Mobile-IoT Ecosystems  
*Luca Verderame, Davide Caputo, Mauro Migliardi, Alessio Merlo*
4. ÂB: An Energy Aware Communications Protocol (EACP) for the Internet of Things (IoT)  
*Navid Shaghaghi, Zach Cameron, Nicholas Kniveton, Jesse Mayer, Will Tuttle, and Peter Ferguson*
5. Towards the Use of Generative Adversarial Neural Networks to Attack Online Resources  
*Lelio Campanile, Mauro Iacono, Fiammetta Marulli, Michele Mastroianni, Fabio Martinelli, Francesco Mercaldo, and Antonella Santone*

**16:00-16:30 Coffee Break****16:30-18:30 Parallel Sessions****AINA-S21: Internet of Things Security****Chair: Euripides G. M. Petrakis, Technical University of Crete (TUC), Greece**

1. Prevention of DDoS Attacks in IoT Networks  
*Ouerfelli Fatima Ezzahra, Barbaria Khaled, Zouari Belhassen, Fachkha Claude*
2. Evaluating Energy Efficiency and Security for Internet of Things: A Systematic Review  
*Luciana P. Oliveira; Moroni N. Vieira; Gabriel B. Leite; Edson L. V. de Almeida*
3. IoT Geolocation Performance Using LoRaWAN  
*Christos Bouras, Apostolos Gkamas, Vasileios Kokkinos*
4. iZen: Secure Federated Service Oriented Architecture for the Internet of Things in the Cloud  
*Neofytos Zacharia, Konstantinos Tsakos, Euripides G. M. Petrakis*
5. Efficient Authentication Scheme using Blockchain in IoT Devices  
*Himani Sikarwar, Debasis Das, Sumit Kalra*
6. Synergy of Trust, Blockchain and Smart Contracts for Optimization of Decentralized IoT Service Platforms  
*Besfort Shala, Ulrich Trick, Armin Lehmann, Bogdan Ghita, Stavros Shiaeles*

**MAW-S1: Multimedia and Web-based Systems****Chair: Kin Fun Li, University of Victoria, Canada**

1. Classification of Web Applications Using AiFlow Features  
*Nathanael Mercaldo, Wei Lu*
2. Proximity-based Context Information Retrieval for Bluetooth Enabled Devices  
*Sergey Koziakov and Manuel Mazzara*
3. Cybersecurity Text Data Classification and Optimization for CTI Systems  
*Ariel Rodriguez and Koji Okamura*
4. Lg-Starship: A Framework for Text Analysis  
*Alessandro Maisto*
5. Shilling Attacks Detection in Collaborative Recommender System: Challenges and Promise  
*Reda A. Zayed, Lamiaa F. Ibrahim, Hesham A. Hefny, Hesham A. Salman*
6. A Face and Posture Recognition Model using CNN for Adapting Different Resolution Images  
*Hiroakik Fuma, Kosuke Takano*
7. Factors for Academic Performance Prediction  
*Linlin Zhang, Kin Fun Li*

**TeNAS-S1: Multimedia and Network Applications****Chair: Shih-Hao Chang, Tamkang University, Taiwan**

1. An Automatic Software Quality and Function Assurance Case Study for Agile  
*Wei Hsu, Jung-Shan Lin, Yi-Chi Chen, Chun-Yen Wang, Chun-Tuan Huang*
2. Your Neighbor Knows What You're Doing: Defending Smart Home IoT Device Traffic from Privacy LAN Attacks  
*Kiana Dziubinski and Masaki Bandai*
3. Tile Quality Selection Method in 360-Degree Tile-based Video Streaming  
*Arisa Sekine and Masaki Bandai*
4. DDoS Attacks in Experimental LTE Networks  
*Jan Feng, Bing-Kai Hong, and Shin-Ming Cheng*
5. Hash Flow: An Access Control Mechanism for Software Defined Network  
*Shih-Hao Chang, Yan Pei, Ping-Tsai Chung*
6. Method by Protection to Reduce Probability of Cascade Failure  
*Yuma Morino and Hiroyoshi Miwa*

**AIMAL-S1: Artificial Intelligence and Intelligent Computing****Chair: Nadeem Javaid, COMSATS University Islamabad, Pakistan**

1. Short-Term Load Forecasting using EEMD-DAE with Enhanced CNN in Smart Grid  
*Afrah Naeem, Hira Gul, Arooj Arif, Sahiba Fareed, Mubbashra Anwar, and Nadeem Javaid*
2. Short Term Electricity Price Forecasting Through Convolutional Neural Network (CNN)  
*Zahoor Ali Khan, Sahiba Fareed, Mubbashra Anwar, Afrah Naeem, Hira Gul, Arooj Arif and Nadeem Javaid*
3. Big Data based Electricity Price Forecasting Using Enhanced Convolutional Neural Network in the Smart Grid  
*Muhammad Adil, Nadeem Javaid, Nazia Daood, Muhammad Asim, Irfan Ullah, and Muhammad Bilal*
4. Personalized Recommendation Algorithm based on User Preference and User Profile  
*Lei Zhou, Caiquan Xiong, Na Deng, Li Shen*
5. Electricity Price Forecasting based on Enhanced Convolutional Neural Network in Smart Grid  
*Nazia Daood, Zahoor Ali Khan, Ashrafullah, Muhammad Jaffar Khan, Muhammad Adil and Nadeem Javaid*
6. Research on Friend Recommendation based on Topic Model and Association Rules  
*Xi Chen, Caiquan Xiong, Na Deng*

**BICom-S1: Intelligent and Bio-Computing Systems****Chair: Leonard Barolli, Fukuoka Institute of Technology, Japan**

1. Infrared Image Fault Identification Method based on YOLO Target Detection Algorithm  
*Fangrong Zhou, Yi Ma, Yutang Ma, Hao Pan*
2. Electricity Load and Price Forecasting using Machine Learning Algorithms in Smart Grid: A Survey  
*Arooj Arif, Nadeem Javaid, Mubbashra Anwar, Afrah Naeem, Hira Gul, and Sahiba Fareed*
3. Recurrent Neural Networks Analysis Application effect of economy sentiment on car manufacturing  
*Seyed M-H Mansourbeigi*
4. Person Re-identification based on Camera Style Adaptation  
*Tong Zhang, Caiquan Xiong*
5. A Comparison Study of Constriction and Random Inertia Weight Router Replacement Methods for WMNs Using WMN-PSODGA Hybrid Intelligent System  
*Seiji Ohara, Admir Barolli, Phudit Ampirit, Shinji Sakamoto, Leonard Barolli, and Makoto Takizawa*

**COLLABES-S1: Collaborative Systems and Applications****Chair: Keita Matsuo, Fukuoka Institute of Technology, Japan**

1. Research on EVM-based Smart Contract Runtime Self-Protection Technology Framework  
*WenChuan Yang, Jing Peng*
2. Document Business Process Model Extension for Modeling Secure Ubiquitous Documents  
*Nouioua Maroua, Alti Adel, and Zouari Belhassen*
3. A Semantic Model toward Smart IoT Device Management  
*François Aïssaoui, Samuel Berlemont, Marc Douet, Emna Mezghani*
4. A Comparison Study of Control Devices for an Omnidirectional Wheelchair  
*Kenshiro Mitsugi, Keita Matsuo and Leonard Barolli*
5. Implementation and Evaluation on Automated E-Learning Contents Creation based on Natural Language Processing Techniques  
*Yiyi Wang, Koji Okamura*
6. IoT Enabled E-business via Blockchain Technology using Ethereum Platform  
*Faisal Shehzad, Nadeem Javaid, Usman Farooq, Hamza Tariq, Israr Ahmad, and Sadia Jabeen*

**19:00-21:00 Banquet Party**

- Location:
- Address:

**Friday, April 17, 2020**

**11:00-11:30 AINA-2020 Organizing Committee Meeting & Discussion**

AINA-2020 Session Schedule  
April 15 – 17, 2020  
University of Campania "Luigi Vanvitelli", Caserta, Italy

Wednesday (April 15, 2020)		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8
Slot	Time	Registration							
Session 1	09:00 – 10:00	Opening Ceremony & AINA-2020 Keynote I (Plenary Room)							
Coffee Break	10:00 – 10:30	Coffee Break							
Session 2	10:30 – 12:30	AINA S1	AINA S2	AINA S3	AINA S4	FINA S1	SSJW S1	HWISE S1	INTRICATE-SEC S1
Lunch	12:30 – 14:00	Lunch Break							
Session 3	14:00 – 16:00	AINA S5	AINA S6	AINA S7	AINA S8	FINA S2	SSJW S2	HWISE S2	INTRICATE-SEC S2
Coffee Break	16:00 – 16:30	Coffee Break							
Session 4	16:30 – 18:30	AINA S9	AINA S10	AINA S11	AINA S12	FINA S3	CCPI S1	IWDENS S1	M2EC S1
Social Event	19:00 – 21:00	Welcome Reception Party							

Thursday (April 16, 2020)		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8
Slot	Time	Registration							
Session 1	09:00 – 10:00	AINA-2020 Keynote II (Plenary Room)							
Coffee Break	10:00 – 10:30	Coffee Break							
Session 2	10:30 – 12:30	AINA S13	AINA S14	AINA S15	AINA S16	FINA S4	BOSON S1	INCM S1	IOEMLA S1
Lunch	12:30 – 14:00	Lunch Break							
Session 3	14:00 – 16:00	AINA S17	AINA S18	AINA S19	AINA S20	EWSEN S1	BOSON S2	INCM S2	EASYSOC S1
Coffee Break	16:00 – 16:30	Coffee Break							
Session 3	16:30 – 18:30	AINA S21	MAW S1	TENAS S1	AINAL S1	BICOM S1	COLLABES S1		
Social Event	19:00 – 21:00	Banquet Party							

Friday (April 17, 2020)		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8
Slot	Time	Registration							
Event	11:00 – 11:30	AINA-2020 Organizing Committee Meeting & Discussion							