PROGRAM GUIDE

AINA-2021
The 35th International Conference on
Advanced Information Networking and Applications

Virtual Conference (Online Presentation)
May 12 - 14, 2021

Technicaily Supported by:

Ryerson University, Canada

Fukuoka Institute of Technology, Japan
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Welcome Message from AINA-2021 Organizers

Welcome to the 35th International Conference on Advanced Information Networking and Applications (AINA-2021). On behalf of AINA-2021 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. 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. We are very proud and honored to have two distinguished keynote talks by Prof. Shahrokh Valaee, University of Toronto, Canada and Dr. Flora Amato, University of Naples “Federico II”, Italy, who will present their recent work and will give new insights and ideas to the conference participants. 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-2021 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 Track Co-Chairs, Program Committee Members and reviewers, who carried out the most difficult work of carefully evaluating the submitted papers. We would like to thank AINA-2021 General Co-chairs, PC Co-chairs, Workshops Co-chairs for their great efforts to make AINA-2021 a very successful event. We have special thanks to the Finance Chair and Web Administrator Co-chairs. We do hope that you will enjoy the conference proceedings and readings.

AINA Steering Committee Co-Chairs
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Prof. Shahrokh Valaee, University of Toronto, Toronto, Canada

Localization in 6G

Abstract: The next generation of wireless systems will employ networking equipment mounted on mobile platforms, Unmanned Air Vehicles (UAV) and low orbit satellites. As a result, the topology of the 6-th Generation (6G) wireless technology will extend to the 3 Dimensional (3D) vertical networking. With its extended service, 6G will also give rise to new challenges which include the introduction of Intelligent Reflective Surfaces (IRS), the mmWave spectrum, the employment of massive MIMO systems and the agility of networks. Along with the advancement in networking technology, the user devices are also evolving rapidly with the emergence of highly capable cellphones, smart IoT equipments and wearable devices. One of the key elements of 6G technology is the need for accurate positioning information. The accuracy of todays positioning systems is not acceptable for many applications of future, especially in smart environments. In this talk, we will discuss how positioning can be a key enabler of 6G and what challenges the next generation of localization technology will face when integrated within the new wireless networks.
AINA-2021 Keynote Talk II

Dr. Flora Amato, University of Naples “Federico II”, Naples, Italy

The Role of Artificial Intelligence in the Industry 4.0

Abstract: Artificial Intelligence (AI) deals with the ability of machines to simulate human mental competences. The AI can effectively boost the manufacturing sector, changing the strategies used to implement and tune productive processes by exploiting information acquired at real-time. Industry 4.0 integrates critical technologies of control and computing. In this talk is discussed the integration of Knowledge Representation, Ontology modelling with Deep Learning technology with the aim of optimizing orchestration and dynamic management of resources. We review AI techniques used in Industry 4.0, and show an adaptable and extensible contextual model for creating context-aware computing infrastructures in Internet of Things (IoT). We also address deep learning techniques for optimizing manufacturing resources, assets management and dynamic scheduling. The application of this model ranges from small embedded devices to high-end service platforms. The presented deep learning techniques are designed to solve numerous critical challenges in Industrial and IoT Intelligence, such as application adaptation, interoperability, automatic code verification and generation of a device-specific intelligent interface.
AINA-2021 Main Conference and Workshops Program

Wednesday, May 12, 2021

AINA-2021 Keynote I
10:00-11:00 (Canada time zone: UTC-4)
16:00-17:00 (Europe time zone: UTC+2)
23:00-24:00 (Japan time zone: UTC+9)

AINA-2021 Keynote Talk I
Prof. Shahrokh Valaee: Localization in 6G

Parallel Sessions
12:30-14:00 (Canada time zone: UTC-4)
18:30-20:00 (Europe time zone: UTC+2)
01:30-03:00 (Japan time zone: UTC+9)

AINA-S1: Security, Privacy and Trust Computing I
Session Chair: Marek R. Ogiela, AGH University of Science and Technology, Poland

1. GPU Accelerated Bayesian Inference for QID Discovery in High-dimensional Data
   Nikolai J. Podlesny, Anne V.D.M. Kayem and Christoph Meinel

2. The Novel System of Attacks Detection in 5G
   Maksim Iavich, Sergiy Gnatyuk, Roman Odarchenko, Razvan Bocu, Sergei Simonov

3. Human Centered Protocols in Transformative Computing
   Lidia Ogiela, Makoto Takizawa, Urszula Ogiela

4. Off-chain Execution of IoT Smart Contracts
   Diletta Cacciagrano, Flavio Corradini, Gianmarco Mazzante, Leonardo Mostarda, and Davide Sestili

   Marek R. Ogiela and Lidia Ogiela

6. Identify Encrypted Packets to Detect Stepping-stone Intrusion
   Jianhua Yang, Lixin Wang, Suhev Shakya and Michael Workman
AINA-S2: Wireless Networks and Mobile Computing I

Session Chair: Christos Bouras, University of Patras, Greece

1. HyDiLLech: a WSN-based Distributed Leak Detection and Localisation in Crude Oil Pipelines
   Safuriyawu Ahmed, Frederic Le Mouel, Nicolas Stouls, and Gislain Lipeme Kouyi

2. Image Similarity based Data Reduction Technique in Wireless Video Sensor Networks for Smart Agriculture
   Christian Salim and Nathalie Mitton

3. Localization of Wireless Sensor Networks Using Negative Knowledge Bilateral Techniques
   Saroja Kanchi

4. User Allocation in 5G Networks Using Machine Learning Methods for Clustering
   Christos Bouras and Rafail Kalogeropoulos

   Wadii Jlassi, Rim Haddad, Ridha Bouallegue, Raed Shubair

6. RADAR - Regression based energy-Aware Data Reduction in WSN: Application to Smart Grids
   Bashar Chreim, Jad Nassar and Carol Habib

AINA-S3: Vehicular Networks I

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

1. An Efficient Cross-Layer Design for Multi-hop Broadcast of Emergency Warning Messages in Vehicular Networks
   Abir Rebei, Fouzi Boukhalfa, Haifa Touati, Mohamed Hadded and Paul Muhlethaler

2. Bandwidth Slicing with Reservation Capability and Application Priority Awareness for Future Vehicular Networks
   Abdullah A. Al-khatib, Abdelmajid Khelil, Mohammed Balfaqih

3. An Effective Location-based Alert Messages Dissemination Scheme For Software Defined Vehicular Networks
   Raoua Chakroun, Slim Abdellatif and Thierry Villemur

4. Blockchain-Based Trust Management Approach For IoV
   Amal Hbaieb, Samiha Ayed, Lamia Chaar

5. Cooperative and Coordinated Mobile Femtocells Technology in High-Speed Vehicular Environments Mobility and Interference Management
   Rand Raheem, Abouabaker Lasebae, Miltos Petridis and Ali Raheem

6. Optimization of Task Allocations in Cloud to Fog Environment with Application to Intelligent Transportation Systems
   Fatos Xhafa, Alhassan Aly and Angel A. Juan

AINA-S4: Internet of Things Applications I

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

1. A New Distributed and Probabilistic Approach for Traffic Control in LPWANs
   Kawtar Lasri, Yann Ben Maissa, Loubna Echabbi, Oana Iova and Fabrice Valois

   Thiago G. Thome, Victor Stroele, Helady Pinheiro and Mario A. R. Dantas

3. Agent-Based Modelling Approach for Decision Making in an IoT Framework
   Adil Chekati, Meriem Riabi and Faouzi Moussa

4. A New Proposal of a Smart Insole for the Monitoring of Elderly Patients
   Salma Saidani, Rim Haddad, Ridha Bouallegue and Raed Shubair
   Mehdi Houichi, Faouzi Jaidi and Adel Bouhoula

   Robert R. Chodorek, Agnieszka Chodorek, and Krzysztof Wajda

AINA-S5: Machine Learning and Prediction Systems I

Session Chair: Manuel Mazzara, Innopolis University, Russia

1. TeleML: Deploying Trained Machine Learning Models in Cross-platform Applications
   Sirojiddin Komolov, Youssef Youssry Ibrahim and Manuel Mazzara

2. Detecting Interaction Activities while Walking using Smartphone Sensors
   Lukas Ehrmann, Marvin Stolle, Eric Klieme, Christian Tietz and Christoph Meinel

3. A Neural Network Model for Fuel Consumption Estimation
   Chayma Werghui, Amine Kchiche, Noureddine Ben Othman, Farouk Kamoun

4. A Multi-view Active Learning Approach for the Hierarchical Multi-Label Classification of Research Papers
   Abir Masmoudi, Hatem Bellaaj and Mohamed Imaiel

5. Deep Learning Library Performance Analysis on Raspberry (IoT Device)
   Luciana P. Oliveira, Jose Humberto da S. S. Santos, Edson L. V. de Almeida, Jose R. Barbosa, Arley W. N. da Silva, Lucas P. de Azevedo and Maria V. L. da Silva

   Rafael Lima Costa, Aline Carneiro Viana, Artur Ziviani and Leobino Nascimento Sampaio

Parallel Sessions

14:30-16:00 (Canada time zone: UTC-4)
20:30-22:00 (Europe time zone: UTC+2)
03:30-05:00 (Japan time zone: UTC+9)

AINA-S6: Network Algorithms, Protocols and Applications

Session Chair: Isaac Woungang, Ryerson University, Canada

1. Time Synchronization for Automotive Prototyping and Testing Platforms
   Esraa Elelimy and Andrew Azmy

2. UAVs Route Planning in Sea Emergencies
   Nicholas Formica, Leonardo Mostarda and Alfredo Navarra

3. Towards Industrial 5G: An LTE+ Case Study Report
   Alexander Gogolev and Markus Aleksy

4. Energy-Efficient Fuzzy Geocast Routing Protocol for Opportunistic Networks
   Kuram Khalid, Isaac Woungang, Sanjay Kumar Dharurhder and Jagdeep Singh

5. Using Clusters for Approximate Continuous k-Nearest Neighbour Queries
   Wendy Osborn

6. Scalability Support with Future Internet in Mobile Crowdsourcing Systems
   Peron Sousa, Antonio A. de A. Rocha
AINA-S7: Distributed and Parallel Computing I
Session Chair: Michel Raynal, University of Rennes 1, France

1. Time Series Forecasting for the Number of Firefighters Interventions
   Roxane Elias Mallouhy, Christophe Gayeux, Chady Abou Jaoude and Abdallah Makhoul

2. From Incomplete to Complete Networks in Asynchronous Byzantine Systems
   Michel Raynal and Jiannong Cao

3. How Far Should We Look Back to Achieve Effective Real-Time Time-Series Anomaly Detection?
   Ming-Chang Lee, Jia-Chun Lin and Ernst Gunnar Gran

4. Performance Analysis of POX and OpenDayLight Controllers based on QoS Parameters
   Houda Hassen, Soumaya Meherzi, Safya Belghith

   Emna Taktak, Mohamed Toussi, Mohamed Moshah, and Ahmed Hadj Kacem

6. The Actual Cost of Programmable SmartNICs: Diving Into the Existing Limits
   Pablo B. Viegaes, Ariel G. de Castro, Arthur F. Lorenzo, Fabio D. Rossi, Marcelo C. Luizelli

AINA-S8: Software-Defined Networking and Network Virtualization
Session Chair: Flavio de Oliveira Silva, Federal University of Uberlandia, Brazil

1. A Monitoring Aware Strategy for 5G Core Slice Embedding
   Oussama Soualah Omar Houidi and Djamal Zeghlach

2. Intra Data Center MultiPath Optimization with Emulated Software Defined Networks
   Lucio Agostinho Rocha

3. Deploying Scalable and Stable XDP-based Network sSices through NASOR Framework for Low-latency Applications
   Rodrigo Moreira, Pedro Froisi Rosa, Rui Luis Andrade Aguiar and Flavio de Oliveira Silva

4. A Comparative Study Between Containerization and Full-Virtualization of Virtualized Everything Functions in Edge Computing
   Hugo Gustavo Valin Oliveira da Cunha, Rodrigo Moreira, Flávio de Oliveira Silva

5. A Proposal for Application-to-Application Network Addressing in Clean-slate Architectures
   Alisson O. Chaves, Pedro Froisi Rosa, Flavio O. Silva

6. The DynAgentX Framework: Extending the Internet Management to the VCPE in the SD-WAN Context
   Maxwell E. Monteir

AINA-S9: Cloud and Service Computing
Session Chair: Stelios Sotiriadis, Birkbeck University of London, UK

1. Smilax: Statistical Machine Learning Autoscaler Agent for FLINK
   Panagiots Giannakopoulos and Euripides G.M. Petrakis

2. Cluster-Based Distributed Self-Reconfiguration Algorithm for Modular Robots
   Mohamad Mousa, Benoit Piranda, Abdallah Makhoul and Julien Bourgeois

3. A Feasibility Study of Log-based Monitoring for Multi-Cloud Storage Systems
   Muhammad I.H. Sukmana, Justus Coster, Wenzel Puentner, Kennedy A. Torkura, Feng Cheng, and Christoph Meinel

4. Detecting Performance Degradation in Cloud Systems using LSTM Autoencoders
   Spyridon Choularias and Stelios Sotiriadis

5. An Ontology for Composite Cloud Services Description
   Wafa Hidri, Riadh Hadj Mitr and Narjès Bellamine Ben Saoud

6. An Adaptive Large-Scale Trajectory Index for Cloud-Based Moving Object Applications
   Omar Alqahtani and Tom Altman
Ayna-S10: Multimedia Systems and Applications

Session Chair: Jolanta Mizera-Pietraszko, Military University of Land Forces, Poland

1. Secure Distribution of Factor Analysis of Mixed Data (FAMD) and Its Application to Personalized Medicine of Transplanted Patients
   Sirine Sayadi, Estelle Geffard, Mario Sudholt, Nicolas Vince, Pierre-Antoine Gourraud

2. A Novel Monocular Mobile Objects Self-Localization Approach based on Ceiling Vision
   Alfredo Cuzzocrea, Luca Camilloti, and Enzo Munolo

3. Progressive Mobile Web Application Subresource Tampering During Penetration Testing
   Tobiasz Wrobel, Micha Kedziora, Micha Szczepaniak, Piotr P. Jowik, Alicja M. Jowik, Jolanta Mizera-Pietraszko

4. An Efficient Image Codec using Spline-based Directional Lifting Wavelet Transform and an Optimized EZW Algorithm
   Rania Boujelbene and Yousra Ben Jemaa

5. Architecture for Real-Time Visualizing Arabic Words with Diacritics using Augmented Reality for Visually Impaired People
   Imene Ouali, Mohamed Saifeddine Hadj Sassi, Mohamed Ben Halima and Ali Wali

6. Classifying Holes, Voids, Negative Objects and Nothing
   Katrina Hooper, Alex Ferworn and Fatima Hussain

Parallel Sessions

16:30-18:00 (Canada time zone: UTC-4)
22:30-00:00 (Europe time zone: UTC+2)
05:30-07:00 (Japan time zone: UTC+9)

Ayna-S11: Pervasive Computing and Big Data Analytics

Session Chair: Alex Thomo, University of Victoria, Canada

1. A Probabilistic Preamble Sampling Anycast Protocol for Low-Power IoT
   Tales Heinfarth and Joao Carlos Giacomin

2. Towards an IoT Architecture to Pervasive Environments Through Design Science
   Mateus Goncalo do Nascimento, Regina M. M. Braga, Jose Maria N. David, Mario Antonio Ribeiro Dantas, Fernando A. B. Colugnati

3. ASAP - Academic Support Aid Proposal for Student Recommendations
   Gabriel Di Iorio Silva, Wagnn Leao Sergio, Victor Stroele and Mario A.R. Dantas

4. Fast and Scalable Triangle Counting in Graph Streams: The Hybrid Approach
   Paramvir Singh, Venkatesh Srinivasan and Alex Thomo

5. A Big Data Science Solution for Analytics on Moving Objects
   Isabelle M. Anderson-Grégoire, Kaitlyn A. Horner, Carson K. Leung, Delica S. Leboe-McGowan, Anifat M. Olawayin, Beni Reydman, Alfredo Cuzzocrea

6. Triangle Enumeration for Billion-Scale Graphs in RDBMS
   Aly Ahmed, Keanelek Enns and Alex Thomo

MAW-S1: Multimedia and Web-based Systems

Chair: Kin Fun Li, University of Victoria, Canada

1. Acquisition and Modeling of Website Parameters
   Krzysztof Zatwarnicki, Stanislav Barton, Damian Mainka
2. Present Clinicians with the Most Relevant Patient Healthcare Data through the Integration of Graph DB, Semantic Web and Blockchain Technologies
   *Steven Delaney, Doug Schmidt, Dr. Christopher Chun Ki Chan*

3. Automatically Injecting Semantic Annotations into Online Articles
   *Hamza Salem, Manuel Mazzara, Said Elnaffar*

4. A Color Adaptation Method in Picture Story with Emotional Expression of Body Motion
   *Huynh Thi Kim Chi, Kosuke Takano, Kin Fun Li*

5. First-Impression-Based Unreliable Web Pages Detection Does First Impression Work?
   *Kenta Yamada, Hayato Yamana*

6. Gender and Academic Performance: A Case Study in Electrical Engineering
   *Linlin Zhang, Kin Fun Li*
Friday, May 14, 2021

Parallel Sessions

00:30-02:00 (Canada time zone: UTC-4)
06:30-08:00 (Europe time zone: UTC+2)
13:30-15:00 (Japan time zone: UTC+9)

AINA-S12: Security, Privacy and Trust Computing II

Session Chair: Hayato Yamana, Waseda University, Japan

1. Investigation of Power Consumption Attack on Android Devices
   Bin Cheng, Tsubasa Kikuta, Yoshinao Toshimitsu and Takamichi Saito

2. Lifestyle Authentication using a Correlation between Activity and GPS/Wi-Fi Data
   Akira Miyazawa, Tran Phuong Thao and Rie Shigetomi Yamaguchi

3. Empirical Study of Software Adoption Process in the Bitcoin Network
   Mitsuyoshi Imamura and Kazumasa Omote

4. Improvement of the Matrix for Simple Matrix Encryption Schem
   Wenchao Liu, Yingnan Zhang, Xu An Wang, Zhong Wang

5. Fast and Accurate Function Evaluation with LUT over Integer-based Fully Homomorphic Encryption
   Ruixiao Li and Hayato Yamana

6. SeBeST: Security Behavior Stage Model and its Application to OS Update
   Ayane Sano, Yukiko Sawaya, Akira Yamada, Ayumu Kubota

AINA-S13: Machine Learning and Prediction System II

Session Chair: Wenny Rahayu, La Trobe University, Australia

1. Stock Prediction Based On Adaptive Gradient Descent Deep Learning
   Bo Li and Li-feng Li

2. k-Level Contact Tracing Using Mesh Block-based Trajectories for Infectious Diseases
   Kiki Adhinugraha, Wenny Rahayu and David Taniar

3. PPCSA: Partial Participation-based Compressed and Secure Aggregation in Federated Learning
   Ahmed Moustafa, Muhammad Asad, Saima Shaukat and Alexander Norta

   Chiu-Han Hsiao, Ming-Chi Tsai, Frank Yeong-Sung Lin, Ping-Cherng Lin, Feng-Jung Yang, Shao-Yu Yang, Sung-Yi Wang, Pin-Ruei Liu, Yennun Huang

   Himanshu Gupta, Tanmay G. Kulkarni, Lov Kumar, Lalita Bhanu Murthy Neti and Aneesh Krishna

AINA-S14: Vehicular Networks II

Session Chair: Makoto Ikeda, Fukuoka Institute of Technology, Japan

1. A QoS-aware Fuzzy-based System for Assessment of Edge Computing Resources in SDN-VANETs
   Ermoni Qafzezi, Kevin Bulykhashi, Phudit Ampririt, Makoto Ikeda, Keita Matsuo, Leonard Barolli

   Shota Uchimura, Masaya Azuma, Yoshiiki Tada, Makoto Ikeda and Leonard Barolli

3. A Usage-based Insurance Policy Bidding and Support Platform Using Internet of Vehicles Infrastructure and Blockchain Technology
   Frank Yeong-Sung Lin, Wen-Yao Lin, Kuang-Yen Tai, Chiu-Han Hsiao, Hao-Jyun Yang
4. Mobile Sensing Data Analysis for Road State Decision in a Snow Country  
   Yoshitaka Shibata, Akira Sakuraba, Yoshikazu Arai, Yoshiya Saito, Jun Hakura

5. Towards the Performance Evaluation of a Trust based Routing Protocol for VANET  
   Amira Kchaou, Ryma Abassi and Sihem Guemara El Fatmi

AINA-S15: Pervasive and Ubiquitous Computing

Session Chair: Keiichi Yasumoto, Nara Institute of Science and Technology, Japan

1. CO-BPG: A Centralized Optimizer for Routing in BGP-based Data Center Networks  
   Chen Duan, Wei Peng and Baosheng Wang

2. SQUAB: A Virtualized Infrastructure for Experiments on BGP and Its Extensions  
   Naoki Umeda, Naoto Yanai, Tatsuya Takemura, Masayuki Okada, Jason Paul Cruz, and Shingo Okamura

3. Thermal Environment Simulator for Office Building with Multi-agent-based Simulation Technique  
   Kodai Murakami, Toshihiro Meguro, Noriyuki Kashiwagi

   Miku Honda, Joji Toshima, Takao Suganuma, Akiko Takahashi

5. Analysis of Visualized Bioindicators Related to Activities of Daily Living  
   Tomokazu Matsui, Kosei Onishi, Shinya Misaki, Hirohiko Sawa, Manato Fujimoto, Teruhiro Mizumoto, Wataru Sasaki, Aki Kimura, Kiyoyasu Maruyama, Keiichi Yasumoto

6. Non-Contact Person Identification by Piezoelectric-based Gait Vibration Sensing  
   Keisuke Umakoshi, Tomokazu Matsui, Makoto Yoshida, Hyuckjin Choi, Manato Fujimoto, Hirohiko Sawa, and Keiichi Yasumoto

BICom-S1: Intelligent and Bio-Computing Systems

Chair: Leonard Barolli, Fukuoka Institute of Technology, Japan

1. An Improved DOA Estimation Algorithm of Neural Network Based on Interval Division  
   GuoBin Li, XiaoOu Song, Kun Shan

2. The Application in Handwritten Digit Recognition of Deep Belief Network Based on Improved Genetic Algorithm  
   Zhu Hong-Xia, Lu Xiu-Hua, Zhu Hong-Ying

3. A Fuzzy-based Scheme for Admission Control in 5G Wireless Networks: Improvement of Slice QoS Considering Slice Reliability as a New Parameter  
   Phudit Ampririt, Ermioni Qafzezi, Kevin Bylykbashi, Makoto Ikeda, Keita Matsuo, Leonard Barolli

4. Evaluation of a User Finger Movement Capturing Device for Control of Self-standing Omnidirectional Robot  
   Kenshiro Mitsugi, Keita Matsuo, Leonard Barolli

5. Adaptive Architecture for Fault Diagnosis of Rotating Machinery  
   Ricardo Rodriguez-Jorge, Laura Sánchez-Pérez, Ji Bla, Ji kvoor

Parallel Sessions

02:30-04:00 (Canada time zone: UTC-4)  
08:30-10:00 (Europe time zone: UTC+2)  
15:30-17:00 (Japan time zone: UTC+9)
AINA-S16: Distributed and Parallel Computing II
Session Chair: Tomoya Enokido, Rissho University, Japan
1. Formal Modeling, Verification, and Analysis of a Distributed Task Execution Algorithm
   Amar Nath and Rajdeep Niyogi
2. BO-RL: Buffer Optimization in Data Plane using Reinforcement Learning
   Sneha M, Kotaro Kataoka and Shobha G
3. The Improved Redundant Active Time-Based (IRATB) Algorithm for Process Replication
   Tomoya Enokido, Dilawaer Duolikun and Makoto Takizawa
4. Antlion Optimizer based Load-balanced Transaction Scheduling for Maximizing Reliability
   Dharmendra Prasad Mahato and Van Huy Pham
5. Application Relocation Method for Distributed Cloud Environment Considering E2E Delay and Cost Variation
   Tetsu Joh, Takayuki Warabino, Masaki Suzuki, Yasuke Suzuki, Tomohiro Otani

AINA-S17: Intelligent Computing
Session Chair: Leonard Barolli, Fukuoka Institute of Technology, Japan
1. Mining Method Based on Semantic Trajectory Frequent Pattern
   Chun Liu, Xin Li
   Tatsuki Miyamoto, Genichi Mori, Yasuke Suzuki and Tomohiro Otani
3. Blue-White Veil Classification of Dermoscopy Images using Convolutional Neural Networks and Invariant
   Dataset Augmentation
   Piotr Milczarski, Micha Beczkowski and Norbert Borowski
4. Granulation of Technological Diagnosis in the Algebra of the n-Pythagorean Fuzzy Sets
   Anna Bryniarska
5. Training Effective Neural Networks on Structured Data with Federated Learning
   Anastasia Pustozerova, Andreas Rauber and Rudolf Mayer
   Samar Bouazizi, Hela Ltifi

AINA-S18: Security, Privacy and Trust Computing III
Session Chair: Hiroaki Kikuchi, Meiji University, Japan
1. Reidentification Risk from Pseudonymized Customer Payment History
   Hiroaki Kikuchi
2. Reinforcement Learning based Smart Data Agent for Location Privacy
   Harkeerat Kaur, Rohit Kumar, and Isao Echizen
3. Anonymous Broadcast Authentication for Securely Remote-Controlling IoT Devices
   Yohei Watanabe, Naoto Yanai, and Junji Shikata
4. Comparison of Personal Security Protocols
   Radoslaw Bulat, Marek R. Ogiela
5. Trust-based Detection Strategy against Replication Attacks in IoT
   Bacem Mbarek, Mouzi Ge, Toma s Pitner
6. An Efficient and Privacy-preserving Billing Protocol for Smart Metering
   Rihem Ben Romdhane, Hamza Hammami, Mohamed Hamdi, Tai-Hoon Kim
AINA-S19: Internet Computing and Web-based Systems

Session Chair: Farookh Khadeer Hussain, University of Technology Sydney, Australia

1. Sentiment-Driven Breakdown Detection Model Using Contextual Embedding ElMo
   Ebtesam Hussain Almansor, Farookh Khadeer Hussain

2. Enhancement of Medical Information Security Through Lightweight Cryptography and Steganography in the platform of Cloud-IoT Ecosystem
   Humayra Binte Arfan, Zinia Anzum Tonni, Saria Jabin Talukder and Rashed Mazumder

3. Proposal of a Disaster Response AI System
   Tomoyuki Ishida, Tenma Hirose

   Eriko Shibamoto, Kosuke Takano

5. Prediction of the Response Time in Web Services based on Matrix Factorization
   Maksymilian Iwanow and Jolanta Wrzuszczak-Noga

6. A Novel Hybrid Recommendation Approach Based on Correlation and Co-occurrence between Activities Within Social Learning Network
   Sonia Souabi, Asmaâ Retbi, Mohammed Khalidi Idrissi, Samir Bennani

AINA-S20: Internet of Things Applications II

Session Chair: Makoto Takizawa, Hosei University, Japan

1. An IoT Application Business-Model on top of Cloud and Fog Nodes
   Zakaria Maamar, Mohammed Al-Khajajji and Murtada Dohan

2. Network Architecture for Agent Communication in Cyber Physical System
   Masafumi Katoh, Tomonori Kubota, Akiko Yamada, Yaji Nomura, Yaji Kojima, Yuichi Yamagishi

3. Design and Implementation of the TBOI (Time-Based Operation Interruption) Protocol to Prevent Late Information Flow in the IoT
   Shigenari Nakamura, Tomoya Enokido and Makoto Takizawa

4. Integration of Localization and Wireless Power Transfer using Microwave
   Kentaro Hayashi, Hikaru Hamase, Yuki Tanaka, Takaya Fujihashi, Shunsuke Saruwatari and Takashi Watanabe

5. Fi-SWoT: Secure Federated Service Oriented Architecture for the Semantic Internet of Things
   Euripides G.M. Petrakis, Ilias Koutsokontos and Karina Rastssinskasqia

6. Shoulder and Trunk Posture Monitoring System over time for Seating Persons
   Ferdewes Tili, Rim Haddad, Ridaa Bouallegue, Raed Shubair

IOEMLA-S1: Intelligent and Secure Systems

Chair: Omid Ameri Sianaki, Victoria University, Australia

1. Social Experiment of Road Sensing on Guided Autonomous Driving Vehicle in Snowy Cold Region
   Akira Sakuraba, Goshi Sato, Yoshia Saito, Jun Hakura, Yoshikazu Arai, Yoshitaka Shibata

2. A Cloud-Based Mobile Application for Women with Gestational Diabetes
   Mahmoud Elkhodr, Shobana Ashokkumar, Belal Alsinglawi, Omar Darwish, Ola Karajeh, Ergun Gide

3. Genetic Algorithms for Scheduling Examinations
   Farshid Hajati, Alireza Rezaee, Soheila Gheisari

4. Solving Job Scheduling Problem Using Genetic Algorithm
   Soheila Gheisari, Alireza Rezaee, Farshid Hajati
Parallel Sessions

04:30-06:00 (Canada time zone: UTC-4)
10:30-12:00 (Europe time zone: UTC+2)
17:30-19:00 (Japan time zone: UTC+9)

E3WSN-S1: Wireless Networks and Energy Efficient Systems
Chair: Leonardo Mostarda, Camerino University, Italy
1. A Hybrid Message Delivery Method for Vehicular DTN Considering Impact of Shuttle Buses and Roadside Units
   Masaya Azuma, Shota Uchimura, Yoshiki Tada, Makoto Ikeda, Leonardo Barolli
2. Optimum Path Finding Framework For Drone Assisted Boat Rescue Missions
   Kemal Ilhan Kilic, Leonardo Mostarda
3. Algorithmic Aspects of the Maximum 2-Edge-colorable Subgraph Problem
   Alessandro Aloisio, Vahan Mkrtchyan
   Nurdaulet Kenges, Enver Ever, and Adnan Yazici

HWISE-S1: Next Generation Networks
Chair: Leonard Barolli, Fukuoka Institute of Technology, Japan
1. Attack of Two Certificateless Aggregate Signature Schemes based on VANET
   Lin Shi, Pu Fu
2. Reduction Of Packet Duplication In Broadcasting Inter Vehicular Information Using 5G Network
   Mezbahul Islam, Fahmida Akter, Ruhul Amin, Ruhul Amin, Raqeebir Rab
3. Speed Control for Autonomous Vehicular in Platoon
   Anis Boubakri, Sonia Metelli Gammar
4. Multiple RPL Objective Functions for Heterogeneous IoT Networks
   Bishmita Hazarika, Rakesh Matam, Somanath Tripathy
   Wadii Jlassi, Rim Haddad, Ridha Bouallegue, Raed Shubair
6. Performance Comparison of IEEE802.11ac vs IEEE 802.11n WLAN in Ipv6
   Samad S. Kolahi, Ahmad Khalid Sooran, Farooq Nasim, Muhammad Mazhar U. Khan

COLLABES-S1: Collaborative Systems and Applications
Chair: Keita Matsuo, Fukuoka Institute of Technology, Japan
1. Implementing a Mobile Healthcare Framework Using Blockchain to Promote Privacy of Electronic Health Records
   Arij Alfaidi, Edward Chow
2. iNote: a Low Cost Banknote Recognition System for Visually Impaired Persons
   Md. Shanjirnur Islam, Ashikar Rahman
3. Design of a Diagnostic Support Method Utilizing Interrogation Information in Traditional Chinese Medicine
   Ryo Nakagawa, Yuka Komuro, Yui Takahashi, Takashi Seki, Yoshiaki Rikitake, Akiko Takahashi
   Paul Thornley, Maryam Bagheri
5. A Survey of Description Methods for Fieldbus Systems
   Darshit Pandya
FINA-S1: Multimedia and Ontology-based Systems

Chair: Tomoya Enokido, Rissho University, Japan

1. A Weak Signal Capture Algorithm Considering DBZP and Half-Bit Difference  
   Kun Shan, XiaoOu Song, GuoBin Li
2. Sorting Algorithms on ARM Cortex A9 Processor  
   Yomna Ben Jmaa, David Duvivier, Mohamed Abid
3. Scalable Leader Election considering Load Balancing  
   Radha Rani, Saurabh Rashpa, Dharmendra Prasad Mahato, Van Huy Pham
4. Multi-focus Image Fusion Algorithm Based on Grey Relation of Similarity in Contourlet  
   Domain Lili Jiao, Jie Deng, Lili Zhang, Qiuqiong Lin
5. NEA: An SDN Switch Architecture Suitable for Application-oriented MAC  
   Diego Nunes Molinos, Romerson Deiny Oliveira, Marcelo Silva Freitas, Marcelo Barros de Almeida, Pedro Froxi Rosa, Flavio de Oliveira Silva
6. A Survey on Data Science Techniques for Predicting Software Defects  
   Farah Atif, Manuel Rodriguez, Luiz J.P. Araujo, Utih Amartiw, Barakat. J. Akinsanya, and Manuel Mazzara

CCPI-S1: Cloud Computing Project and Initiatives

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

1. Intelligent Cloud Agents in Multi-participant Conversations for Cyber-physical Exploitation of Cultural Heritage  
   Angelo Ambrosi, Rocco Aversa, Massimo Ficco, Danilo Cacace, Salvatore Venticinque
2. E-government and Italian Local Government: Managerial Approach in Two Macro Areas to Improve Managers Culture and Services  
   Marino, A. , Pariso, P. , Picariello, M.
3. Container based Simulation of Electric Vehicles Charge Optimization  
   Rocco Aversa, Dario Branco, Beniamino Di Martino, Salvatore Venticinque
4. Cloud Computing Projects: A Bibliometric Overview  
   Teodor-Florin Fortis, Alexandra-Emilia Fortis
5. Applying Patterns to support Deployment in Cloud-Edge environments: A Case Study  
   Beniamino Di Martino, Antonio Esposito
6. Obserbot: A Totally Automated Watcher to Monitor Essential Services  
   Gregorio DAgostino, Alberto Tofani

AINA-S21: Wireless Networks and Mobile Computing II

Session Chair: Naohiro Hayashibara, Kyoto Sangyo University, Japan

1. Message Ferry Routing based on Nomadic Lévy Walk in Wireless Sensor Networks  
   Koichiro Sugihara and Naohiro Hayashibara
2. Resource Allocation for Millimeter Wave D2D Communications in Presence of Static Obstacles  
   Rathindra Nath Dutta and Sashi C. Ghosh
3. A Comparison Study of Two Different Replacement Methods for WMNs by WMN-PSOHHC Hybrid Intelligent System Considering Constriction Method and Random Inertia Weight Method  
   Shinji Sakamoto, Leonard Barolli and Shusuke Okamoto
4. Performance Evaluation of RIWM and LDVM for WMN-PSOSA-DGA Considering Chi-square Distribution  
   Admir Barolli, Shinji Sakamoto, Phudit Ampririt, Leonard Barolli and Makoto Takizawa
5. Joint Channel and Power Allocation Algorithm for Flying Ad Hoc Networks based on Bayesian Optimization  
   Pengcheng Wang, Wei Pen, Wensin Zhang, Gaofeng Lv
AINA-2021 Keynote II

06:30-07:30 (Canada time zone: UTC-4)
12:30-13:30 (Europe time zone: UTC+2)
19:30-20:30 (Japan time zone: UTC+9)

AINA-2021 Keynote Talk II

Dr. Flora Amato: The Role of Artificial Intelligence in the Industry 4.0

Parallel Sessions

08:00-09:30 (Canada time zone: UTC-4)
14:00-15:30 (Europe time zone: UTC+2)
21:00-22:30 (Japan time zone: UTC+9)

INTRICATE-SEC-S1: Secure Systems and Tools

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

1. A Real-Time Intrusion Detection System for Software Defined 5G Networks
   Razvan Bocu, Maksim Iavich, Sabin Tabirca

2. On the Structure and Assessment of Trust Models in Attribute Assurance
   Andreas Grüner, Christoph Meinel

3. Virtual Environment for Analysis and Evaluation of DDoS Attacks
   Ryo Tokuyama, Yuichi Futa, Hikofumi Suzaki, Hiroyuki Okazaki

4. Towards a Secure Smart Parking Solution for Business Entities
   Gerald B. Imbugwa, Manuel Mazzara

5. The General Data Protection Regulation and Log Pseudonymization
   Artur Varanda, Leonel Santos, Rogério Las de C. Costa, Adail Oliveira, Carlos Rabadão

6. A Review of Scaling Genome Sequencing Data Anonymisation
   Nikolai J. Podlesny, Anne V.D.M. Kayem, Christoph Meinel

M2EC-S1: Cloud and Edge Computing

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

1. Functionizer - A Cloud Agnostic Platform for Serverless Computing
   Olivia Matei, Katarzyna Materka, Pawel Skrzypek, Rudolf Erdei

2. Interactive Application Deployment Planning for Heterogeneous Computing Continuum
   Daniel Hass, Josef Spillner

3. MEDAL: An AI-driven Data Fabric Concept for Elastic Cloud-to-Edge Intelligence
   Vasileios Theodorou, Ilias Gerostathopoulos, Iyad Alshabani, Alberto Abelló, David Breitgand

4. Adaptive Container Scheduling in Cloud Data Centers: A Deep Reinforcement Learning Approach
   Tania Lorido-Botran, Muhammad Khurram Bhatti

5. Reliable Server Pooling Based Workload Offloading with Mobile Edge Computing: A Proof-of-Concept
   Thomas Dreibholz, Somnath Mazumdar
BOSON-S1: Smart and Computing Methods

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

1. Unsupervised Classification of Medical Documents Through Hybrid MWEs Discovery
   Alessandro Maisto

2. Building a Pos Tagger and Lemmatizer for the Italian Language
   Alessandro Maisto, Walter Balzano

3. Extracting Information from Food-related Textual Sources
   Alessandra Amato, Francesco Bonavolontà, Giovanni Cozzolino

4. PaSy - Management of a Smart-Parking System based on Priority Queues
   Walter Balzano, Walter Galiano, Silvia Stranieri

5. An Ontological Model to Represent Food Consumption Risks
   Alessandra Amato, Francesco Bonavolontà, Giovanni Cozzolino

FINA-S2: Blockchain and Secure Systems

Chair: Leonard Barolli, Fukuoka Institute of Technology, Japan

1. Formal Methods to Analyze Energy Efficiency and Security for IoT: A Systematic Review
   Luciana Pereira Oliveira, Arley Willer Neves da Silva, Lucas Pereira de Azevedo, Maria Vitória Lima da Silva

2. Survey on Blockchain Applications for Healthcare: Reflections and Challenges
   Swati Megha, Hanza Salem, Enes Ayan, Manuel Mazzara, Hamna Aslam, Mirko Farina, Mohammad Reza Bahrami, Muhammad Ahmad

3. Innovative Blockchain-Based Applications - State of the Art and Future Directions
   Hada Alsobhi, Aber Mirdad, Suhair Alothabi, Mwaheb Almadani, Inam Alanazi, Moharab Alalyan, Wafa Alharbi, Rania Alhazmi, Farookh Khadeer Hussain

4. A Lightweight Authentication Scheme For SDN-Based Architecture In IoT
   Nadia Kammoun, Ryma Abassi, Sihem Guemara El Fatmi, Mohamed Mosbah

5. SVM-Based Ensemble Classifiers to Detect Android Malware
   Md Faiz Iqbal Faiz

6. Cryptanalysis of a Privacy Preserving Ranked Multi-Keyword Search Scheme in Cloud Computing
   Xu An Wang

SSUM-S1: Smart and Sustainable Mobility

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

1. Evaluation Approach for Smart Charging Ecosystem With Focus on Automated Data Collection and Indicator Calculation
   Marit K. Natvig, Shanshan Jiang, Svein Hallsteinsen, Salvatore Venticinque, Regina Enrich Sard

2. The Use of Automatic Vehicle Location (AVL) Data for Improving Public Transport Service Regularity
   Benedetta Argenzio, Nicola Amatucci, Marilisa Botte, Luca Dacierno, Luca Di Costanzo, Luigi Pariota

3. Modelling Behavior in a Route Choice Driving Simulation Experiment in Presence of Information
   Roberta Di Pace, Stefano de Luca, Francesco Galante, Luigi Pariota

4. A Smart Road Application: The A2 Mediterranean Highway Project in Italy
   Ilaria Henke, Gennaro Nicola Bifulco, Armando Carteni, Luigi Di Francesco, Antonio Di Stasio

5. A Big Data Analysis and Visualization Pipeline for Green and Sustainable Mobility
   Dario Branco, Beniamino Di Martino, Salvatore Venticinque

6. A Simplified Map-matching Algorithm for Floating Car Data
   Federico Karagulian, Gabriella Messina, Gaetano Valentì, Carlo Liberto, Fabio Carapellucci
AINA-S22: Security, Privacy and Trust Computing IV

Session Chair: Arjan Durresi, Indiana University Purdue University at Indianapolis, USA

1. Risk Analysis for Worthless Crypto Asset Networks
   Wataru Taguchi and Kazumasa Omote

2. Investigation and Analysis of Features in Decentralized Network Management of Minor Cryptocurrencies
   Mitsuyoshi Imanura and Kazumasa Omote

3. Comparative Study of Traditional Techniques for Unsupervised Autonomous Intruder Detection
   Anik Alvi, Tarem Ahmed and Mohammad Faisal Uddin

4. On the Adaptation of Bitcoin-like Blockchains for the Secure Storage of Traffic-related Events
   El-hacen Diallo, Omar DIB and Khaldoun Al Agha

5. DoSSec: A Reputation-based DoS Mitigation Mechanism on SDN
   Ranyelson N. Carvalho, Lucas R. Costa, Jacir L. Bordim and Eduardo Alchieri

6. Trustworthy Acceptance: A New Metric for Trustworthy Artificial Intelligence used in Decision Making in Food-Energy-Water Sectors
   Suleyman Uslu, Davinder Kaur, Samuel J Rivera, Arjan Durresi, Mimoza Durresi and Meghna Babbar-Sebens
Online Meeting Schedule for AINA-2021
12 May to 14 May, 2021

1st day:
Wednesday, 12 May , 2021

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Additional information
The session schedules indicated in the program are based on the UTC-4:00 time zone.