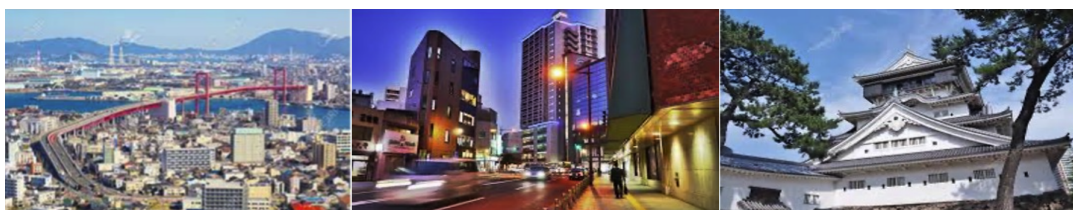


# PROGRAM GUIDE



## AINA-2024

The 38<sup>th</sup> International Conference on  
Advanced Information Networking and Applications



Sponsored by:



Technically Supported by:



Virtual Conference (Hybrid conference)  
Kitakyushu International Convention Center, Kitakyushu, Japan  
April 17 - April 19, 2024

# TABLE OF CONTENTS

AINA-2024 Organizing Committee . . . . .	3
Welcome Message from AINA-2024 Organizers . . . . .	4
AINA-2024 Keynote Talk I . . . . .	5
AINA-2024 Keynote Talk II . . . . .	6
AINA-2024 Main Conference and Workshops Program . . . . .	7
Wednesday, 17 April, 2024 . . . . .	7
AINA-2024 Keynote I . . . . .	7
Coffee Break . . . . .	7
Parallel Sessions . . . . .	7
AINA-S1: Security and Privacy I . . . . .	7
AINA-S2: Internet of Things and Cyber-Physical Systems I . . . . .	8
AINA-S3: Multimedia Systems and Applications I . . . . .	8
AINA-S4: Distributed Ledger Technologies and Distributed-Parallel Computing I . . . . .	8
NetSMM-S1: Network and System Management and Monitoring . . . . .	9
CCPI-S1: Cloud Computing Project and Initiatives I . . . . .	9
Lunch . . . . .	9
Parallel Sessions . . . . .	9
AINA-S5: Security and Privacy II . . . . .	10
AINA-S6: Internet of Things and Cyber-Physical Systems II . . . . .	10
AINA-S7: Multimedia Systems and Applications II . . . . .	10
AINA-S8: Distributed Ledger Technologies and Distributed-Parallel Computing II . . . . .	11
BICom-S1: Intelligent and Bio-Computing Systems . . . . .	11
CCPI-S2: Cloud Computing Project and Initiatives II . . . . .	11
Coffee Break . . . . .	12
Parallel Sessions . . . . .	12
AINA-S9: Security and Privacy III . . . . .	12
AINA-S10: Internet of Things and Cyber-Physical Systems III . . . . .	12
AINA-S11: Next Generation Wireless Networks I . . . . .	12
AINA-S12: Distributed Ledger Technologies and Distributed-Parallel Computing III . . . . .	13
E3WSN-S1: Wireless Networks and Energy Efficient Systems . . . . .	13
CCPI-S3: Cloud Computing Project and Initiatives III . . . . .	13
Welcome Reception Party . . . . .	14
Thursday, 18 April, 2024 . . . . .	15
AINA-2024 Keynote II . . . . .	15
Coffee Break . . . . .	15
Parallel Sessions . . . . .	15
AINA-S13: Security and Privacy IV . . . . .	15
AINA-S14: Web-based Systems and Content Distribution I . . . . .	15

AINA-S15: Software-Defined Networking and Network Architectures . . . . .	16
AINA-S16: Data Mining, Big Data Analytics and Social Networks I . . . . .	16
INTRICATE-SEC-S1: Secure Systems and Tools . . . . .	16
CCPI-S4: Cloud Computing Project and Initiatives IV . . . . .	16
Lunch . . . . .	17
Parallel Sessions . . . . .	17
AINA-S17: Security and Privacy V . . . . .	17
AINA-S18: Web-based Systems and Content Distribution II . . . . .	17
AINA-S19: Intelligent Computing and Machine Learning I . . . . .	18
AINA-S20: Data Mining, Big Data Analytics and Social Networks II . . . . .	18
M2EC-S1: Cloud and Edge Computing . . . . .	18
CCPI-S5: Cloud Computing Project and Initiatives V . . . . .	18
Coffee Break . . . . .	19
Parallel Sessions . . . . .	19
AINA-S21: Security and Privacy VI . . . . .	19
AINA-S22: Network Architectures, Protocols and Algorithms I . . . . .	19
AINA-S23: Intelligent Computing and Machine Learning II . . . . .	20
AINA-S24: Data Mining, Big Data Analytics and Social Networks III . . . . .	20
FINA-S1: Frontiers of Information Systems and Network Applications I . . . . .	20
CCPI-S6: Cloud Computing Project and Initiatives VI . . . . .	21
Friday, 19 April, 2024 . . . . .	22
Parallel Sessions . . . . .	22
AINA-S25: Security and Privacy IV . . . . .	22
AINA-S26: Network Architectures, Protocols and Algorithms II . . . . .	22
AINA-S27: Intelligent Computing and Machine Learning III . . . . .	22
MAW-S1: Data Mining and Web Applications . . . . .	23
COLLABES-S1: Collaborative Systems and Applications . . . . .	23
DIAC-S1: Diversified IoT Applications of Cybersecurity . . . . .	23
Lunch . . . . .	23
Parallel Sessions . . . . .	24
AINA-S28: Cloud and Service Computing I . . . . .	24
AINA-S29: Next Generation Wireless Networks II . . . . .	24
AINA-S30: Intelligent Computing and Machine Learning IV . . . . .	24
HWISE-S1: Heterogeneous Wireless Networks . . . . .	25
DUDW-S1: Digital Humanities and Digital World I . . . . .	25
Coffee Break . . . . .	25
Parallel Sessions . . . . .	25
AINA-S31 : Cloud and Service Computing II . . . . .	25
AINA-S32 : Next Generation Wireless Networks III . . . . .	26
AINA-S33 : Intelligent Computing and Machine Learning V . . . . .	26
FINA-S2: Frontiers of Information Systems and Network Applications II . . . . .	26
DUDW-S2: Digital Humanities and Digital World II . . . . .	27
Coffee Break . . . . .	27
Banquet Party . . . . .	27
AINA-2024 Session Schedule . . . . .	28

## **AINA-2024 Organizing Committee**

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Ermioni Qafzezi, Fukuoka Institute of Technology, Japan

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### **Steering Committee Chair**

Leonard Barolli, Fukuoka Institute of Technology, Japan

## Welcome Message from AINA-2024 Organizers

Welcome to the 38th International Conference on Advanced Information Networking and Applications (AINA-2024). On behalf of AINA-2024 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 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 and ad-hoc networks, vehicular networks, multimedia computing, social networking, semantic collaborative systems, as well as IoT, Big Data, Cloud Computing, Artificial Intelligence and Machine Learning. 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. Fatos Xhafa, Technical University of Catalonia, Spain and Dr. Juggapong Natwichai, Chiang Mai University, Thailand, 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-2024 technical program and conference proceedings. First, we would like to thank all authors for submitting their papers. 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 City of Kitakyushu, Kitakyushu Convention & Visitors Association and The Telecommunications Advancement Foundation for financial support.

We would like to thank AINA-2024 General Co-chairs, PC Co-chairs, Workshops Organizers for their great efforts to make AINA-2024 a very successful event. We have special thanks to Finance Chair and Web Administrator Co-chairs.

We do hope that you will enjoy the conference proceedings and readings.

**AINA-2024 Keynote Talk I**

**Fatos Xhafa, Technical University of Barcelona, Barcelona, Spain**

**Agile Edge: Harnessing the Power of the Intelligent Edge by Agile Optimization**

**Abstract:** The Digital Cloud Ecosystem comprises various degrees of computing granularity from large Cloud servers and Data Centers to IoT devices, leading to the Cloud-to-thing continuum computing paradigm. In this context, the Intelligent Edge aims at placing intelligence to the end devices, at the edges of the Internet. The premise is that collective intelligence from the IoT data deluge can be achieved and used at the edges of the Internet, offloading the computation burden from the Cloud systems and leveraging real time intelligence. This, however, comes with the challenges of processing and analyzing the IoT data streams in real time. In this talk, we will address how agile optimization can be useful to harnessing the power of the intelligent edge. Agile optimization is a powerful and promising solution, which differently from traditional optimization methods, is able to find optimized and scalable solutions under real-time requirements. We will bring real-life problems and case studies from Smart City Open Data Repositories to illustrate the approach. Finally, we will discuss the research challenges and emerging vision on the agile intelligent edge.

## AINA-2024 Keynote Talk II



**Juggapong Natwichai, Chiang Mai University, Chiang Mai, Thailand**

### **Challenges in Entity Matching in AI Era**

**Abstract:** Entity Matching (EM) is to identify and link entities originating from various sources that correspond to identical real-world entities, thereby constituting a foundational component within the realm of data integration. For example, in order to counter-fraud detection, the datasets from sellers, financial services providers, or even IT infrastructure service providers might be in need for data integration, and hence, the EM is highly important here. This matching process is also recognized for its pivotal role in data augmenting to improve the precision and dependability of subsequent tasks within the domain of data analytics. Traditionally, the EM procedure composes of two integral phases, namely, blocking and matching. The blocking phase associates with the generation of candidate pairs, and could affect the size and complexity of the data. Meanwhile, the matching phase will need to trade-off between the accuracy and the efficiency. In this talk, the challenges of both components are thoroughly explored, particularly with the aids of AI techniques. In addition, the preliminary experiment results to explore some important factors which affect the performance will be presented.



## AINA-2024 Main Conference and Workshops Program

**Wednesday, 17 April, 2024**

### AINA-2024 Keynote I

**10:00-11:00 (UTC+9) Japan Standard Time**  
**03:00-04:00 (UTC+2) CEST Time Zone (Rome, Italy)**

#### AINA-2024 Keynote Talk I

**Prof. Fatos Xhafa:** Agile Edge: Harnessing the Power of the Intelligent Edge by Agile Optimization

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### Coffee Break

**11:00-11:30 (UTC+9) Japan Standard Time**

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### Parallel Sessions

**11:30-13:00(UTC+9) Japan Standard Time**  
**04:30-06:00(UTC+2) CEST Time Zone (Rome, Italy)**

#### AINA-S1: Security and Privacy I

**Session Chair: Lisandro Zambenedetti Granville, Federal University of Rio Grande do Sul, Brazil**

1. Container-Level Auditing in Container Orchestrators with eBPF  
*Fábio Junior Bertinatto, Daniel Arioza Fernandes Almeida, Jéferson Campos Nobre, Lisandro Zambenedetti Granville*
  2. Using Biometric Data to Authenticate Tactical Edge Network Users  
*Guilherme Falcão da Silva Campos, Jovani Dalzochio, Raul Ceretta Nunes, Luis Alvaro de Lima Silva, Edison Pignaton de Freitas, Rafael Kunst*
  3. SovereignRx: An Electronic Prescription System based on High Privacy, Blockchain, and Self-Sovereign Identity  
*Mauricio de V. Barros, Jean E Martina*
-



4. DVID: Adding Delegated Authentication to SPIFFE Trusted Domains  
*Andrew Jessup, Henrique Zanela Cochak, Guilherme Koslovski, Mauricio Pillon, Charles Christian Miers, Pedro H. Barcha Correia, Marco Antonio Marques, Marcos A. Simplicio Jr.*
5. A Security Evaluation of Chaos Attribute-Based Access Control (ABAC) for Cloud Computing  
*Omessead Ben Mbarak, Anis Naanaa, Sadok Elasmî*

### **AINA-S2: Internet of Things and Cyber-Physical Systems I**

#### **Session Chair: Tomoya Enokido, Risho University, Japan**

1. Secure Lightweight Data Communication between the IoT Devices and Cloud Service  
*Tran Viet Xuan Phuong, Tho Thi Ngoc Le, Huy Le Ngoc*
2. IoT Based Road State Sensing System Toward Autonomous Driving in Snow Country  
*Yoshitaka Shibata, Yasushi Bansyo, Shoichi Noguchi*
3. An Approach to Attack Modeling for the IoT: Creating Attack Trees from System Descriptions  
*João B. F. Sequeiros, Francisco Tchissaquila Chimuco, Tiago M. C. Simões, Mario M. Freire, Pedro R. M. Inácio*
4. From Fault Tree Analysis to Runtime Model-Based Assurance Cases  
*Luis Nascimento, André L. de Oliveira, Regina Villela, Ran Wei, Richard Hawkins, Tim Kelly*
5. An Energy Consumption Model to Change the TBFC Model of the IoT  
*Dilawaer Duolikun, Tomoya Enokido, Makoto Takizawa*

### **AINA-S3: Multimedia Systems and Applications I**

#### **Session Chair: Minoru Uehara, Toyo University, Japan**

1. How to Run GUI Applications on a Java Development Environment Based on JupyterLab  
*Yibao Liang, Minoru Uehara*
2. Advancing Multi-Writer Snapshots Algorithm  
*Sudhanshu Sharma, Dharmendra Prasad Mahato*
3. A Water Level Estimation System Based on Image Recognition of Water Level Gauge  
*Sora Asada, Chihiro Yukawa, Kyohei Wakabayashi, Kei Tabuchi, Yuki Nagai, Tetsuya Oda, Leonard Barolli*
4. Towards an Adaptive Gamification Recommendation Approach for Interactive Learning Environments  
*Souha Bennani, Ahmed Maalel, Henda Ben Ghézala, Achref Daouahi*
5. Towards Ecological Tunisian Sign Language Recognition System  
*Sana Fakhfakh, Yousra Ben Jemaa*

### **AINA-S4: Distributed Ledger Technologies and Distributed-Parallel Computing I**

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

1. Regulation Compliance System for IoT Environments: GDPR Compliance as a Use-Case  
*Mamun Abu-Tair, Aftab Ali, Samson Kahsay Gebresilassie, Joseph Rafferty, Zhan Cui*
2. Enabling AI in Agriculture 4.0: A Blockchain-based Mobile CrowdSensing Architecture  
*Ankit Agrawal, Bhaskar Mangal, Ashutosh Bhatia, Kamlesh Tiwari*
3. Adaptive Consensus: Enhancing Robustness in Dynamic Environments  
*Kshitij Mandyal, Dharmendra Prasad Mahato*
4. Stand-Up Indulgent Gathering on Lines for Myopic Luminous Robots  
*Quentin Bramas, Hirotsugu Kakugawa, Sayaka Kamei, Anissa Lamni, Fukuhiro Ooshita, Masahiro Shibata, Sebastien Tixeuil*
5. Data Poisoning Attacks in Gossip Learning  
*Alexandre Pham, Maria Potop-Butucaru, Sebastien Tixeuil, Serge Fdida*

**NetSMM-S1: Network and System Management and Monitoring****Chair: Marco Antonio To, Universidad Galileo, Guatemala**

1. Hop-Constrained Oblivious Routing using Prim's-Sollin's Algorithm  
*Mehak C, Dharmendra Prasad Mahato*
2. Harnessing the Advanced Capabilities of LLM for Adaptive Intrusion Detection Systems  
*Oscar G. Lira, Alberto Marroquin, Marco Antonio To*
3. Real-Time Rogue Base Stations Detection System in Cellular Networks  
*Ying-Tso Wen, Sz-Hsien Wu, Chia-Yi Chen, Yen-Yuan Hsu, Po-Hsueh Wang, Shun-Min Hsu, Chen-Yuan Chang, Bo-Chen Kung*
4. A Brief Review of Machine Learning-based Approaches for Advanced Interference Management in 6G In-X Sub-Networks  
*Nessrine Trabelsi, Lamia Chaari Fourati*
5. A Comparative Study of Adaptive and Switched Beamforming for 5G Mobile Network Applications  
*Meryem Hamdi, Mohamed Hayouni, Emna Jebabli*

**CCPI-S1: Cloud Computing Project and Initiatives I****Chair: Rocco Aversa, University of Salerno, Italy**

1. Targeted and Automatic Deep Neural Networks Optimization for Edge Computing  
*Luca Giovannesi, Gabriele Proietti Mattia, Roberto Beraldi*
2. Edge to Cloud Network Function Offloading in the ADAPTO Framework  
*Alessio Botta, Roberto Canonico, Annalisa Navarro, Giovanni Stanco, Giorgio Ventre, Antonio Buonocunto, Antonio Fresa, Enzo Gentile, Leonardo Scommegna, Enrico Vicario*
3. DEFEDGE: Threat-driven Security Testing and Proactive Defense Identification for Edge-cloud Systems  
*Valentina Casola, Marta Catillo, Alessandra De Benedictis, Felice Moretta, Antonio Pecchia, Massimiliano Rak, Umberto Villano*
4. Swarmchestrator: Towards a Fully Decentralised Framework for Orchestrating Applications in the Cloud-to-Edge Continuum  
*Tamas Kiss, Amjad Ullah, Gabor Terstyanszky, Odej Kao, Soeren Becker, Yiannis Verginadis, Antonis Michalas, Vlado Stankovski, Attila Kertész, Elisa Ricci, Jörn Altmann, Bernhard Egger, Francesco Tusa, Jozsef Kovacs, Robert Lovas*
5. REDRAW: FedeRatED leaRning for humAn Wellbeing  
*Rocco Aversa, Mario A. Bochicchio, Mario Magliulo, Albina Orlando, Anna Pristner, Erika Schirinzi, Gabriele Siciliano, Salvatore Venticinque*

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**Lunch****13:00-14:00(UTC+9) Japan Standard Time**

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**Parallel Sessions****14:00-15:30(UTC+9) Japan Standard Time  
07:00-08:30(UTC+2) CEST Time Zone (Rome, Italy)**

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**AINA-S5: Security and Privacy II****Session Chair: Marek R Ogiela, AGH University of Science and Technology, Poland**

1. Specifying SSI over EAP: Towards an Even Better Eduroam in the Future  
*Ronald Petrlc*
2. FastSGX: A Message-passing based Runtime for SGX  
*Subashiny Tanigassalame, Yohan Pipereau, Adam Chader, Jana Toljaga, Gaël Thomas*
3. Discovering Personally Identifiable Information in Textual Data - A Case Study with Automated Concatenation of Embeddings  
*Md. Hasan Shahriar, Abrar Hasin Kamal, Anne Kayem*
4. Towards User-Oriented Steganography  
*Urszula Ogiela, Marek R Ogiela*
5. AI-based Cybersecurity Systems  
*Marek R Ogiela, Lidia D Ogiela*

**AINA-S6: Internet of Things and Cyber-Physical Systems II****Session Chair: Ashutosh Bhatia, Birla Institute of Technology and Science, Pilani, India**

1. IoRT-based Distributed Algorithm for Robust Team Formation and Its Application to Smart City Operation  
*Amar Nath, Rajdeep Niyogi*
2. A WSN and Vision based Energy Efficient and Smart Surveillance System using Computer Vision and AI at Edge  
*Shreeram Hudda, K Haribabu, Rishabh Barnwal, Abhishek Khurana*
3. Mitigating Resource Depletion and Message Sequencing Attacks in SCADA Systems  
*Neminath Hubballi, Nisha Kumari Barsha*
4. SmartDriveAuth: Enhancing Vehicle Security with Continuous Driver Authentication via Wearable PPG Sensors and Deep Learning  
*Laxmi Chhibbar, Sujay Patni, Siddarth Todi, Ashutosh Bhatia, Kamlesh Tiwari*
5. A Vision Transformer Based Indoor Localization Using CSI Signals in IoT Networks  
*Gaurav Prasad, Aditya Gupta, Avnish Aryan, Sudhir Kumar*

**AINA-S7: Multimedia Systems and Applications II****Session Chair: Chung-Ming Huang, National Cheng Kung University, Taiwan**

1. Adaptive SVC-DASH Video Streaming Using the Segment-Set-based Backward Quality's Increment Control  
*Chung-Ming Huang, Han-I Wang*
2. Image Quality Distortion Classification using Vision Transformer  
*Nay Chi Lynn, Tetsuya Shimamura*
3. A Simulation System for Decision of Camera Angle View and Placement: A Comparison Study of Simulation and Experimental Results  
*Kyohei Wakabayashi, Chihiro Yukawa, Yuki Nagai, Tetsuya Oda, Leonard Barolli*
4. Health Parameters Monitoring Through an Integrated Multilayer Digital Twin Architecture  
*Constantin Lucian Aldea, Razvan Bocu, Delia Monica Duca Iliescu*
5. Video Compression Method Using Vector Quantization  
*Yusuke Gotoh, Toranosuke Ohashi, Kiki Adhinugraha*

**AINA-S8: Distributed Ledger Technologies and Distributed-Parallel Computing II****Session Chair: Yong Zheng, Illinois Institute of Technology, USA**

1. PerfResolv: A Geo-Distributed Approach for Performance Analysis of Public DNS Resolvers Based on Domain Popularity  
*Marcelo Almeida, Muriel Figueredo Franco, Eder John Scheid, Luciano Zembruzki, Lisandro Zambenedetti Granville*
2. HPC-SBC: An Experimental Effort to Evaluate Storage in High-Performance Computing Configurations Using a Context Approach  
*Fernando de Almeida Silva, João Pedro de Souza Jardim da Costa, José Maria N. David, Mario A. R. Dantas*
3. An Empirical Comparison of Outlier Detection Methods for Identifying Grey-Sheep Users In Recommender Systems  
*Yong Zheng*
4. COTTONTRUST: Reliability and Traceability in Cotton Supply Chain Using Self-Sovereign Identity  
*Janana F. B. Duarte, Gilson S. Junior, Gabriel F. C. da Silva, Mauricio A. Pillon, Guilherme P. Koslovski, and Charles C. Miers*
5. Effective Parallel Formal Verification of Reconfigurable Discrete-event Systems Formalizing with Isabelle/HOL  
*Sohaib Soualah, Mohamed Khalgui and Allaoua Chaoui*

**BICom-S1: Intelligent and Bio-Computing Systems****Session Chair: Evjola Spaho, Polytechnic University of Tirana, Albania**

1. Application of Soft Computing Techniques for Clustering in VANETs: A Survey  
*Evjola Spaho, Orjola Jaupi*
2. EarlyStage Diabetes Risk Detection Using Comparison of Xgboost, Lightgbm, and Catboost Algorithms  
*Henny Febriana Harumy, Sri Melvani Hardi, Muhammad Fajri Al Banna*
3. Blockchain Based Artificial Intelligence of Things (AIoT) for Wildlife Monitoring  
*R Madhusudhan, Pravisha P*
4. Research on Screw Detection Using Artificial Intelligence Technology  
*Wei-Chun Hsu, Hsing-Chung Chen, Pei-Yu Hsu, Yong-Jian Siao*
5. An efficient method for lung cancer image segmentation and nodule type classification using deep learning algorithms  
*Dorsaf Hrizi, Khaoula Tbarki Tbarki, Sadok El Asmi*

**CCPI-S2: Cloud Computing Project and Initiatives II****Chair: Dario Branco, University of Campania "Luigi Vanvitelli", Italy**

1. Greening AI: A Framework for Energy-Aware Resource Allocation of ML Training Jobs with Performance Guarantees  
*Roberto Sala, Federica Filippini, Danilo Ardagna, Daniele Lezzi, Francesc Lordan Gomis, Patrick Thiem*
  2. Optimization of University Services through Cloud-Edge Integration: Study of a use case at the University of Naples Federico II  
*Barone Giovanni Battista, Sabella Gianluca*
  3. Distributed Collaborative AR on Cloud Continuum: a Case Study for Cultural Heritage  
*Beniamino Di Martino, Gennaro Junior Pezzullo, Vincenzo Bombace, Dario Branco, Simonetta Ceglie*
  4. Survey on Reference Architecture for Cloud Continuum and Multi-Access Edge Computing (MEC) in 5G Networks  
*Beniamino Di Martino, Gennaro Junior Pezzullo, Warren Law, Per Ljungberg, Souradip Saha*
  5. Elastic autoscaling for distributed workflows in MEC networks  
*Benedetta Picano, Riccardo Reali, Leonardo Scommegna, Enrico Vicario*
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## Coffee Break

15:30-16:00(UTC+9) Japan Standard Time

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## Parallel Sessions

16:00-17:30(UTC+9) Japan Standard Time  
09:00-10:30(UTC+2) CEST Time Zone (Rome, Italy)

### AINA-S9: Security and Privacy III

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

1. Design and Implementation of a Fuzzy-based System for Assessment of Relationship Trust  
*Shunya Higashi, Phudit Ampririt, Ermioni Qafzezi, Makoto Ikeda, Keita Matsuo, Leonard Barolli*
2. BarongTrace: A Malware Event Log Dataset for Linux  
*Baskoro Adi Pratomo, Stefanus Albert Kosim, Hudan Studiawan, Angela Oryza Prabowo*
3. Leveraging Chat-Based Large Vision-Language Models for Multimodal Out-of-Context Detection  
*Fatma Shalabi, Hichem Felouat, Huy H. Nguyen, Isao Echizen*
4. SoK: Directions and Issues in Formal Verification of Payment Protocols  
*Hideki Sakurada, Kouichi Sakurai*
5. PCPR: Plaintext Compression and Plaintext Reconstruction for Reducing Memory Consumption on Homomorphically Encrypted CNN  
*Takuya Suzuki, Hayato Yamana*

### AINA-S10: Internet of Things and Cyber-Physical Systems III

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

1. API Descriptions for the Web of Things  
*Aimilios Tzavaras, Chrisa Tsinaraki, Euripides G.M. Petrakis*
2. Efficient Communication Protocol for Programmable Matter  
*Jean-Paul A. Yaacoub, Benoit Piranda, Lassabe Frédéric, Hassan Noura*
3. A Distributed Platform for Cycle Detection and Analysis in Cyber-Physical Systems  
*Gabriel Iuhasz, Silviu Panica, Florin Fortis, Alecsandru Duma*
4. Real-Time Task Scheduling and Dynamic Resource Allocation in Fog Infrastructure  
*Mayssa Trabelsi, Samir Ben Ahmed*
5. Automotive User Interface based on LSTM-Grid Search Deep Learning Model for IoT Security Change Request Classification  
*Zaineb Sakhravi, Taher Labidi, Asma Sellami, Nadia Bouassida*

### AINA-S11: Next Generation Wireless Networks I

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

1. Performance Evaluation of V2X Communication based on Channel Bonding Wireless Link Method for Autonomous Driving  
*Yoshitaka Shibata, Yasushi Banshy, Shoichi Noguchi*
  2. New Strategy to Reduce Communication Interference of Platoon  
*Anis Boubakri, Hajer Boujezza*
-

3. Performance Improvement of DE Algorithm for Indoor Positioning in Wireless Sensor Networks  
*Shu-Hung Lee, Chia-Hsin Cheng, Kuan-Hsien Lu, Yeong-Long Shiue, Yung-Fa Huang*
4. Terahertz Antenna Array for 6G CubeSat Inter-Satellite Links  
*Chamseddine Oueslati, Mondher Labidi, Nabil Dakhli*
5. Adaptive Admission Control for 6G Network Slicing Resource Allocation (A2C-NSRA)  
*Fadoua Debbabi, Rihab Jmal, Lamia Chaari Fourati, Raouia Taktak, Rui Luis Aguiar*

### **AINA-S12: Distributed Ledger Technologies and Distributed-Parallel Computing III**

#### **Session Chair: Enver Ever, Middle East Technical University Northern Cyprus Campus, Turkey**

1. DARS: Empowering Trust in Blockchain-Based Real-World Applications with A Decentralized Anonymous Reputation System  
*Mouhamed Amine Bouchiha, Yacine Ghamri-Doudane, Mourad Rabah, Ronan Champagnat*
2. Interoperability Between EVM-based Blockchains  
*Alessandro Bigiotti, Leonardo Mostarda, Alfredo Navarra, Andrea Pinna, Roberto Tonelli, Matteo Vaccargiu*
3. Two-dimensional Models of Markov Processes for System Availability  
*Orhan Gemikonakli, Eser Gemikonakli, Enver Ever*
4. IoT Identity Management Systems: the State-of-the-art, Challenges and a Novel Architecture  
*Samson Kahsay Gebresilassie, Joseph Rafferty, Liming Chen, Zhan Cui, Mamun Abu-Tair*
5. STARM: STreaming Association Rules Mining in High-Dimensional Data  
*Rania Mkhinihi Gahar, Olfa Arfaoui, Adel Hidri, Suleiman Ali Alsaif, Minyar Sassi Hidri*

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

#### **Chair: Leonardo Mostarda, University of Perugia, Italy**

1. Homomorphic Cryptography Authentication Scheme to Eliminate Machine Tools Gaps in Industry 4.0  
*Shamsher Ullah, Jianqiang Li, Farhan Ullah, Diletta Cacciagrano, Muhammad Tanveer Hussain, Victor C.M. Leung*
2. Fixed-Parameter Tractability for Branchwidth of the Maximum-Weight Edge-Colored Subgraph Problem  
*Alessandro Aloisio*
3. On Coverage in Multi-Interface Networks with Bounded Pathwidth  
*Alessandro Aloisio, Alfredo Navarra*
4. Sensitivity Analysis of Performability Model to Evaluate PBFT Systems  
*Marco Marcozzi, Antiniscia Di Marco, Leonardo Mostarda*
5. Algorithmic Aspects of Distributing Energy Consumption in Multi-Interface Networks  
*Alessandro Aloisio*
6. Blockchain and Financial Services A study of the Applications of Distributed Ledger Technology (DLT) in Financial Services  
*Ramiz Salama, Diletta Cacciagrano, Fadi Al-Turjman*

### **CCPI-S3: Cloud Computing Project and Initiatives III**

#### **Chair: Antonio Esposito, University of Campania "Luigi Vanvitelli", Italy**

1. Decentralized Update of IoT and Edge Devices  
*Francesco Bruschi, Michele Terziani, Marco Zanghieri, Donatella Sciuto*
2. AI-SPRINT: Design and Runtime Framework for Accelerating the Development of AI Applications in the Computing Continuum  
*Francesco Lattari, Matteo Matteucci, Danilo Ardagna*
3. Workflow Scheduling in the Cloud-Edge Continuum  
*Luca Zanussi, Daniele Tessera, Luisa Massari, Maria Carla Calzarossa*

4. On the performance of STAC-FastAPI and PgSTAC using a cloud-native deployment  
*Alexandru Munteanu, Silviu Panica, Gabriel Iuhasz*
  5. The Efficiency of Building Maintenance Using Digital Twins: A Literature Review  
*Ionica Larisa Puiu, Teodor-Florin Fortis*
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### **Welcome Reception Party**

**18:00-20:00(UTC+9) Japan Standard Time**

Kitakyushu International Conference Center (1st floor, Event hall)

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**Thursday, 18 April, 2024****AINA-2024 Keynote II**

**10:00-11:00 (UTC+9) Japan Standard Time**  
**03:00-04:00 (UTC+2) CEST Time Zone (Rome, Italy)**

**AINA-2024 Keynote Talk I**

**Prof. Juggapong Natwichai:** Challenges in Entity Matching in AI Era

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**Coffee Break**

**11:00-11:30 (UTC+9) Japan Standard Time**

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**Parallel Sessions**

**11:30-13:00(UTC+9) Japan Standard Time**  
**04:30-06:00(UTC+2) CEST Time Zone (Rome, Italy)**

**AINA-S13: Security and Privacy IV****Session Chair: Kin Fun Li, University of Victoria, Canada**

1. Enhancing Robustness of LLM-Synthetic Text Detectors for Academic Writing: A Comprehensive Analysis  
*Zhicheng Dou, Yuchen Guo, Ching-Chun Chang, Huy H. Nguyen, Isao Echizen*
2. Enhancing Security and Efficiency: A Lightweight Federated Learning Approach  
*Chunlu Chen, Kevin I-Kai Wang, Peng Li, Kouichi Sakurai*
3. Privacy-Preserving Location-Based Services: A DQN Algorithmic Perspective  
*Manish Pandey, Harkeerat Kaur, Sudipta Basak, Isao Echizen*
4. Knowledge Empowered Deep Reinforcement Learning to Prioritize Alerts Generated by Intrusion Detection Systems  
*Lalitha Chavali, Paresh Saxena, Barsha Mitra*
5. A Study on Privacy-preserving Transformer Model for Cross-domain Recommendation  
*Jing Ning, Kin Fun Li*

**AINA-S14: Web-based Systems and Content Distribution I****Session Chair: Mario A R Dantas, Federal University of Juiz de Fora, Brazil**

1. Enabling Dynamic Vulnerability Assessment for Multi-Web Application using Executable Directed Acyclic Graph  
*Jakkarin Lapmoon, Thunpisit Kosolsriwiwat, Sirinyaporn Jiraporn, Somchart Fugkeaw*
  2. Discovery of RESTful Web Services Based on the OpenApi 3.0 Standard with Semantic Annotations  
*Alberto Tuti Soki, Frank Siqueira*
  3. An ontology-based approach to improve the lead time for industrial services  
*Luiza Bartels de Oliveira, Marco Antônio Araújo, Mario Antonio Ribeiro Dantas*
  4. Enabling Intelligent Data Exchange in the Brazilian Energy Sector: A Context-Aware Ontological Approach  
*Matheus Brugger Jenevain, Milena Faria Pinto, Mario Antonio Ribeiro Dantas, Regina Maria Maciel Braga Villela, José Maria Nazar David, Victor Stroele de Andrade Menezes*
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**AINA-S15: Software-Defined Networking and Network Architectures****Session Chair: Flavio de Oliveira Silva, Federal University of Uberlandia, Brazil / University of Minho, Portugal**

1. Exploring SDN Based Firewall And NAPT: A Comparative Analysis with Iptables and OVS in Mininet  
*Md Fahad Monir, Azwad Fawad Hasan*
2. SDN Supported Network State Aware Command and Control Application Framework  
*Carlos Andre Rodrigues da Silva, Lauro de Souza Silva, Julio Cesar Santos dos Anjos, Jorgito Matiuzzi Stocchero, Juliano Wickboldt, Edison Pignaton de Freitas*
3. Reliability-Aware SFC Protection By Using Nodes With Spare Resources  
*Hung-You Chen, Pi-Chung Wang*
4. Highly Reliable Communication using Multipath Slices with Alternating Transmission  
*Italo Tiago da Cunha*

**AINA-S16: Data Mining, Big Data Analytics and Social Networks I****Session Chair: Carson K. Leung, University of Manitoba, Canada**

1. Entity Co-occurrence Graph-based Clustering for Twitter Event Detection  
*Bundit Manaskasemsak, Natthakit Netsiwawichian, Arnon Rungsawang*
2. Anomaly Detection with Generalized Isolation Forest  
*Brett E. Downey, Carson K. Leung, Adam G.M. Pazdor, Ryan A. L. Petrillo, Denys Popov, Benjamin R. Schneider*
3. Toward a Deep Multimodal Interactive Query Expansion for Healthcare Information Retrieval Effectiveness  
*Sabrina Benzarti, Wafa Tebourski, Wahiba Ben Abdessalem Karaa*
4. Multi-level Frequent Pattern Mining on Pipeline Incident Data  
*Connor C. J. Hryhoruk, Carson K. Leung, Jingyuan Li, Brandon A. Narine, and Felix Wedel*

**INTRICATE-SEC-S1: Secure Systems and Tools****Chair: Anne Kayem, University of Exeter, UK**

1. Analyzing Security and Privacy Risks in Android Video Game Applications  
*Ratiroos Phaenthong, Sudsanguan Ngamsuriyaroj*
2. Detecting and Mitigating MitM Attack on IoT Devices Using SDN  
*Mohamed Ould-Elhassen Aoueileyine, Nader Karmous, Ridha Bouallegue, Neji Youssef, Anis Yazidi*
3. Anonymous Credentials And Self-Sovereign Identity - An Initial Assessment  
*Katja Assaf*
4. Network Intrusion Detection with Incremental Active Learning  
*Münteha Nur Bedir Tüzün, Pelin Angin*
5. Quantum Advancements in Securing Networking Infrastructures  
*Hadi Salloum, Murhaf Alawir, Mohammad Anas Alatasi, Saleem Asekrea, Manuel Mazzara, Mohammad Reza Bahrami*

**CCPI-S4: Cloud Computing Project and Initiatives IV****Chair: Salvatore D'Angelo, University of Campania "Luigi Vanvitelli", Italy**

1. Structuring the Continuum  
*Marco Danelutto, Patrizio Dazzi, Massimo Torquati*
2. Empowering Sustainable Mobility: Exploring MaaS as a Big Data Application in Transportation Planning  
*Antonella Falanga, Ilaria Henke, Armando Carteni*
3. Mobile Phones in the Cloud-Edge Continuum: Understanding the TEEs Role  
*Alessandro De Crecchio, Giovanni Maria Cristiano, Alfredo Petruolo*

4. Cloud-native Software Development Life Cycle: A Case Study with Italian Ministry of Justice  
*Dario Branco, Beniamino Di Martino, Salvatore D'Angelo, Antonio Esposito, Vincenzo De Lisi, Gianluca Paravati*
  5. Methodologies for the Parallelization, Performance Evaluation and Scheduling of Applications for the Cloud-Edge Continuum  
*Antonio Esposito, Rocco Aversa, Enrico Barbierato, Maria Carla Calzarossa, Beniamino Di Martino, Luisa Massari, Ivan Giuseppe Mongiardo, Daniele Tessera, Salvatore Venticinquè, Luca Zanussi, Rasha Zieni*
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## Lunch

13:00-14:00(UTC+9) Japan Standard Time

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## Parallel Sessions

14:00-15:30(UTC+9) Japan Standard Time  
07:00-08:30(UTC+2) CEST Time Zone (Rome, Italy)

### AINA-S17: Security and Privacy V

**Session Chair: Masakatsu Nishigaki, Shizuoka University, Japan**

1. Design and Performance Evaluation of a Two-stage Detection of DDoS Attacks Using a Trigger with a Feature on Riemannian Manifolds  
*Yang Lyu, Yaokai Feng, Kouichi Sakurai*
2. Enhancing Mobile Crowdsensing Security: A Proof of Stake-based Publisher Selection Algorithm to Combat Sybil Attacks in Blockchain-assisted MCS Systems  
*Ankit Agrawal, Ashutosh Bhatia, Kamlesh Tiwari*
3. Messages and Incentives to Promote Updating of Software on Smartphones  
*Ayane Sano, Yukiko Sawaya, Takamasa Isohara, Masakatsu Nishigaki*
4. Detecting Malicious Android Game Applications on Third-Party Stores using Machine Learning  
*Thanaporn Sanamontre, Vasaka Visoottiviseth, Chaiyong Ragkhitwetsagul*
5. Neural Network Innovations in Image-Based Malware Classification: A Comparative Study  
*Hamzah Al-Qadasi, Benchadi Djafer Yahia M, Salim Chehida, Kazuhiro Fukui, Saddek Bensalem*

### AINA-S18: Web-based Systems and Content Distribution II

**Session Chair: Hsing-Chung Chen, Asia University, Taiwan**

1. Development of Automated Satellite Image Processing System of JPSS-1 for Hotspot Monitoring Application  
*Nikorn Sutthisangiam, Suwatchai Kamolsantiroj, Phongsak Keeratiwintakorn*
  2. MotionInsights: Object Tracking in Streaming Video with Apache Flink  
*Dimitrios Banelas, Euripides G. M. Petrakis*
  3. Using Scrum to Build Tourism Information Mobile Application  
*Edyta Wiesława Zmudczynska, Hsing-Chung Chen*
  4. A Method for Estimating the Number of Diseases in Computed Tomography Reports of the Japanese Medical Image Database (J-MID): Variations Among Facilities  
*Koji Sakai, Yu Ohara, Yosuke Maehara, Takeshi Takahashi, Kei Yamada*
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**AINA-S19: Intelligent Computing and Machine Learning I****Session Chair: Leonard Barolli, Fukuoka Institute of Technology, Japan**

1. Enhancing Intrusion Detection System Using Machine Learning and Deep Learning  
*Madhusudhan R, Shubham Kumar Thakur, Pravisha P*
2. Integration of Machine Learning with Quantum Annealing  
*Hadi Salloum, Hamza Shafee Aldaghstany, Osama Orabi, Ahmad Haidar, Mohammad Reza Bahrami and Manuel Mazzara*
3. An Empirical Analysis on Leveraging User Reviews with NLP-Enhanced Word Embeddings for App Rating Prediction  
*Pratyush Mishra, Vikram Singh, Aneesh Krishna, Lov Kumar*
4. Honey Bee Inspired Routing Algorithm for Sparse Unstructured P2P Networks  
*Aman Verma, Sanat Thakur, Ankush Kumar, Dharmendra Prasad Mahato*
5. Anomaly Detection in WBANs using CNN-Autoencoders and LSTMs  
*Kartikeya Dubey, Chittaranjan Hota*

**AINA-S20: Data Mining, Big Data Analytics and Social Networks II****Session Chair: Dahlan Nariman, Ritsumeikan Asia Pacific University, Japan**

1. Enhancing Effectiveness and Efficiency of Customers Reviews Data Collection through Multithreaded Web Scraping Approach  
*Dahlan Nariman*
2. Investigating BERT Layer Performance and SMOTE Through MLP-driven Ablation on Gittercom  
*Bathini Sai Akash, Vikram Singh, Aneesh Krishna, Lalita Bhanu Murthy, Lov Kumar*
3. Detecting Signs of Depression in Social Networks Users: A Framework for Enhancing the Quality of Machine Learning Models  
*Abir Gorrab, Nourhène Ben Rabah, Bénédicte Le Grand, Rébecca Deneckère, Thomas Bonnerot*
4. Sweeping Knowledge Graphs with SPARQL Queries to Palliate Q/A Problems  
*Wiem Baazouzi, Marouen Kachroud, Sami Faiz*
5. Trustworthiness of X Users: A One-Class Classification Approach  
*Tanveer Khan, Fahad Shorab, Antonis Michalas, Moncef Gabbouj*

**M2EC-S1: Cloud and Edge Computing****Chair: Thomas Dreibholz, Simula Metropolitan Centre for Digital Engineering, Norway**

1. In-network Monitoring Strategies for HPC Cloud  
*Masoud Hemmatpour, Tore Heide Larsen, Nikshubha Kumar, Ernst Gunnar Gran*
2. Optimizing Network Latency: Unveiling the Impact of Reflection Server Tuning  
*Jan Marius Evang, Thomas Dreibholz*
3. Extension of Resource Authorization Method with SSI in Edge Computing  
*Ryu Watanabe, Ayumu Kubota, Jun Kurihara, Kouichi Sakurai*
4. An AI-Driven System for Identifying Dangerous Driving Vehicles  
*Hibiki Tanaka, Kazuki Shimomura, Naoki Tanaka, Makoto Ikeda, Leonard Barolli*

**CCPI-S5: Cloud Computing Project and Initiatives V****Chair: Antonio Esposito, University of Campania "Luigi Vanvitelli", Italy**

1. All for One, All at Once: A Pluggable and Referenceable Architecture for Monitoring Biophysical Parameters Across Intertwined Domains  
*Oscar Tamburis, Adriano Tramontano, Giulio Perillo, Arriel Benis, Mario Magliulo*

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2. Enabling Precision Irrigation through a Hierarchical Edge-to-Cloud System  
*Gabriele Penzotti, Michele Amoretti, Stefano Caselli*
  3. Performance Evaluation of Placement Policies for Cloud-Edge Applications  
*Ivan Giuseppe Mongiardo, Luisa Massari, Maria Carla Calzarossa, Belen Bermejo, Daniele Tessera*
  4. Combining Federated and Ensemble Learning in Distributed and Cloud Environments: an Exploratory Study  
*Fiammetta Marulli, Lelio Campanile, Stefano Marrone, Laura Verde*
  5. Situation Awareness in the Cloud-Edge Continuum  
*Giuseppe D'Aniello, Matteo Gaeta, Francesco Flammini, Giancarlo Fortino*
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### Coffee Break

15:30-16:00(UTC+9) Japan Standard Time

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### Parallel Sessions

16:00-17:30(UTC+9) Japan Standard Time  
09:00-10:30(UTC+2) CEST Time Zone (Rome, Italy)

#### AINA-S21: Security and Privacy VI

**Session Chair: Leonardo Mostarda, University of Perugia, Italy**

1. Cognitive Blind Blockchain CAPTCHA Architecture  
*Nghia Dinh Trong, Huy Tran Tien, Viet-Tuan Le, Huu-Thanh Duong, Lidia Ogiela, Vinh Truong Hoang*
2. Transparent Encryption for IoT using Offline Key Exchange over Public Blockchains  
*Mamun Abu-Tair, Unsub Zia, Jamshed Memon, Bryan W. Scotney, Jorge Martinex Carracedo, Ali Sajjad*
3. An End-to-End Approach for the Detection of Phishing Attacks  
*Badis Hammi, Tristan Bilot, Danyil Bazain, Nicolas Binand, Maxime Jaen, Chems Mitta, Nour El Madhoun*
4. Efficient Inner-Product Argument from compressed -Protocols and Applications  
*Emanuele Scala, Leonardo Mostarda*
5. A Decentralized Blockchain-based Platform for Secure Data Sharing in Cloud Storage Model  
*Houaida Ghanmi, Nasreddine Hajlaoui, Haifa Touati, Mohamed Hadded, Paul Muhlethaler, Saadi Boudjit*

#### AINA-S22: Network Architectures, Protocols and Algorithms I

**Session Chair: Alfredo Navarra, University of Perugia, Italy**

1. PRVC: A Novel Vehicular Ad-hoc Network Caching based on Pre-trained Reinforcement Learning  
*Ziyang Zhang, Lin Guan, Yuanchen Li, Seth Gbd Johnson, Qinggang Meng*
  2. Game Theory-Based Efficient Message Forwarding Scheme for Opportunistic Networks  
*Vinesh Kumar, Jagdeep Singh, Sanjay Kumar Dhurandher, Isaac Woungang*
  3. Improved UCB MAB-Based Algorithm for Relay Selection in Cooperative Narrowband PLC Communication  
*Wided Belhaj Sghaier, Hela Gassara, Fatma Rouissi, Fethi Tlili*
  4. Mutual-Visibility in Fibonacci Cubes  
*Alfredo Navarra, Francesco Piselli*
  5. Integrated Vehicle Access Protocol with Priority-Based Messaging for VANETs  
*Mayssa Dardour, Mohamed Mosbah, Toufik Ahmed*
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**AINA-S23: Intelligent Computing and Machine Learning II****Session Chair: Farookh Khadeer Hussain, University of Technology Sydney, Australia**

1. Topic Analysis of Japanese Sentences Using Sentence Embeddings  
*Kenshin Tsumuraya, Yonghui Huang, Minoru Uehara, Yoshihiro Adachi*
2. Performance Improvement of Semantic Search Using Sentence Embeddings by Dimensionality Reduction  
*Kenshin Tsumuraya, Minoru Uehara, Yoshihiro Adachi*
3. A Fuzzy-based System for Assessment of Performance Error in VANETs  
*Ermioni Qafzezi, Kevin Bylykbashi, Shunya Higashi, Phudit Ampririt, Keita Matsuo, Leonard Barolli*
4. Carbon Credits Price Prediction Model (CCPPM)  
*Inam Alanazi, Faris AL-Doghman, Abdulrahman Alsubhi, Farookh Khadeer Hussain*
5. Experimental Exploration of the Power of Conditional GAN in Image Reconstruction-based Adversarial Attack Defense Strategies  
*Haibo Zhang, Kouichi Sakurai*

**AINA-S24: Data Mining, Big Data Analytics and Social Networks III****Session Chair: Lidia Ogiela, AGH University of Science and Technology, Poland**

1. The Home-delivery Analysis of Prescription Drugs for Chronic Diseases in the Post-pandemic Era- An Example of Local Community Pharmacy  
*Wei-Yuan Ho, Hsing-Chung Chen*
2. A Language-Agnostic Compression Framework for the Bitcoin Blockchain  
*Orestes Papanastassiou, Alex Thomo*
3. Analyzing Topic Models: A Tourism Recommender System Perspective  
*Maryam Kamal, Gianfranco Romani, Giuseppe Ricciuti, Aris Anagnostopoulos, Ioannis Chatzigiannakis*
4. Dissecting the Hype: A Study of WallStreetBets' Sentiment and Network Correlation on Financial Markets  
*Kevin Wang, Bill Wong, Mohammad Ali Khoshkholghi, Purav Shah, Ranesh Naha, Aniket Mahanti, Jong-Kyou Kim*
5. Transformative Intelligence in Data Analysis and Knowledge Exploration  
*Lidia Ogiela, Makoto Takizawa, Urszula Ogiela*

**FINA-S1: Frontiers of Information Systems and Network Applications I****Chair: Nour El Madhoun, Sorbonne University, France**

1. A Personalized Parking Guidance Service based on Computer Vision Technology for Large Car Parks  
*Zhi-Wei Kao, Chi-Yi Lin*
2. Mathematical Modelling of COVID-19 using ODEs  
*Dharmendra Prasad Mahato, Radha Rani*
3. Analyzing Monitoring and Controlling Techniques for Water Optimization Used in Precision Irrigation  
*Rajni Goyal, Amar Nath, Utkarsh Niranjana, Rajdeep Niyogi*
4. Addressing Security Challenges in Copyright Management Applications: The Blockchain Perspective  
*Nour El Madhoun, Badis Hammi, Saad El Jaouhari, Djamel Mesbah, Elsi Ahmadi*
5. A Hybrid Deep Reinforcement Learning Routing Method Under Dynamic and Complex Traffic with Software Defined Networking  
*Ziyang Zhang, Lin Guan, Qinggang Meng*

**CCPI-S6: Cloud Computing Project and Initiatives VI****Chair: Beniamino Di Martino, University of Campania "Luigi Vanvitelli", Italy**

1. XSS-Unearth: A Tool for Forensics Analysis of XSS Attacks  
*Davide Alfieri, Massimo Ficco, Michele Mastroianni, Francesco Palmieri*
2. MUSA: A Platform for Data-intensive Services in Edge-Cloud Continuum  
*Marco Anisetti, Claudio A Ardagna, Massimo Banzi, Filippo Berto, Ruslan Bondaruc, Ernesto Damiani, Alessandro Pedretti, Arianna Pisati, Antonio Reticò*
3. Towards a Patterns Driven Cloud Edge Continuum Architecture for eHealth  
*Alessia Sabia, Beniamino Di Martino*
4. Architectural Patterns for Software Design Problem-solving in the Implementation of Federated Learning Structures within the E-Health Sector  
*Beniamino Di Martino, Domenico Di Sivo, Antonio Esposito*
5. Integration of Landsat and Sentinel Data for Localized High-resolution Monitoring of the Territory  
*Gholamreza Nikravesh, Raffaele Persico, Alfonso Senatore, Giuseppe Mendicino*
6. Personalized Federated Learning and Edge-Cloud Continuum for Privacy-Preserving Health Informatics: Opportunities and Challenges  
*Mario A. Bochicchio, Sileshi Nibret Zeleke*

**Friday, 19 April, 2024****Parallel Sessions**

**10:00-11:30 (UTC+9) Japan Standard Time**  
**03:00-04:30 (UTC+2) CEST Time Zone (Rome, Italy)**

**AINA-S25: Security and Privacy IV****Session Chair: Arjan Durrezi, IUPUI, USA**

1. Enhancing the 5G-AKA Protocol with Post-Quantum Digital Signature Method  
*Gabriel Figlarz, Fabiano Hessel*
2. A Non-Interactive One-Time Password-based Method to Enhance the Vault Security  
*Juarez Oliveira, Altair Santin, Eduardo Viegas, Pedro Horschulhack*
3. Causal Inference to Enhance AI Trustworthiness in Environmental Decision-Making  
*Suleyman Uslu, Davinder Kaur, Samuel Rivera, Arjan Durrezi, Meghna Babbar-Sebens*
4. Forecasting Malware Incident Rates in Higher Education Institutions  
*Rildo Antonio Souza, Vitor Castro Silva, Sylvio Barbon Junior, Bruno Zarpelão*

**AINA-S26: Network Architectures, Protocols and Algorithms II****Session Chair: Isaac Woungang, Toronto Metropolitan University, Canada**

1. ElasticWISP-NG: Towards Dynamic Resource Provisioning for WISP Access Networks  
*Duncan Ewan Cameron, Murugaraj Odiathevar, Alvin C Valera, Winston K. G. Seah*
2. BBR-R: Improving BBR's RTT Fairness by Dynamically Adjusting Delay Detection Intervals  
*Zewei Han, Go Hasegawa*
3. Evaluation of the Trust Zone Model with the Information Flow Control  
*Shigenari Nakamura, Makoto Takizawa*
4. On Network Design and Planning 2.0 for Optical-computing-enabled Networks  
*Dao Thanh Hai, Isaac Woungang*
5. DEAR: DRL Empowered Actor-critic scheduler for Multipath QUIC Under 5G/B5G Hybrid Networks  
*Pattiwat Shrivastava Kumar, Paresh Saxena, Ozgu Alay*

**AINA-S27: Intelligent Computing and Machine Learning III****Session Chair: Mario A R Dantas, Federal University of Juiz de Fora, Brazil**

1. From Context to Forecast: Ontology-based Data Integration and AI for Events Prediction  
*Jefferson Amará, Victor Ströele, Regina Braga, José Maria N David*
2. FEVER: Intelligent Behavioral Fingerprinting for Anomaly Detection in P4-based Programmable Networks  
*Matheus Saueressig, Muriel Figueredo Franco, Eder J. Scheid, Alberto Huertas Celdrán, G r me Bovet, Burkhard Stiller, Lisandro Z Granville*
3. Intelligent Health Promotion: Machine Learning in the Prevention of Stress-Related Diseases  
*Gabriel Fernandes Silva, Victor Str ele, Regina Braga, Mario A R Dantas, Michael A. Bauer*
4. Comparative Analysis of Data Preprocessing Methods in Machine Learning for Breast Cancer Classification  
*Timothy Stockton, Brandon Peddle, Angelica Gaulin, Emma Wiechert, Wei Lu*
5. Task Allocation Based on Simulated Annealing for Edge Industrial Internet  
*Vitor Gabriel Reis Lux Barboza, Janine Kniess*

**MAW-S1: Data Mining and Web Applications****Chair: Kin Fun Li, University of Victoria, Canada**

1. Multiclassification Analysis of Volumetric, Protocol, and Application Layer DDoS Attacks  
*Eric Brown, John Fisher, Aaron Hudon, Erick Colston, Wei Lu*
2. A Classification Method of Image Feature using Neural Metric Learning for Natural Environment Video  
*Yukito Seo, Raftly Arief Kanza, Nobuya Watanabe, Kin Fun Li, Kosuke Takano*
3. An Imaging Camera Anomaly Detection System Based on Optical Flow  
*Chihiro Yukawa, Tetsuya Oda, Yuki Nagai, Kyohei Wakabayashi, Leonard Barolli*
4. A Framework for Blockchain-Based Scalable E-Voting System Using Sharding and Time-Slot Algorithm  
*Madhusudhan R, Vishnu K K*

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

1. Examining University Students and Teachers' Behavioral Intention to Upgrade Blended Learning Using an Extended TAM Model  
*Rund Fareed Mahafdah, Seifeddine Bouallegue, Ridha Bouallegue*
2. Applying Artificial Intelligence in the E-Learning Field: Review Article  
*Rund Fareed Mahafdah, Seifeddine Bouallegue, Ridha Bouallegue*
3. Impact of IoT Adoption on Supply Chain Management and Supplier Relationships: Systematic Review  
*Adil Hammadi, Torsten Reiners, Beenish Husnain*
4. IoT Environment Based on Multi-Agent Systems in Smart Home  
*Ameni Harrabi, Hassen Hqmd, Khilil Ahmad Alsulbi, Meftah Zouai*
5. A Review of Social Network Regulations and Mechanisms for Safeguarding Children's Privacy  
*Mykaele Abreu, Eduardo Viegas, Altair Santin*
6. Research on E-commerce Customer Segmentation Based on K-means++ Algorithm  
*Jing Zhang*

**DIAC-S1: Diversified IoT Applications of Cybersecurity****Chair: Anas Mohammad Ramadan AlSobeh, Southern Illinois University Carbondale, USA & Yarmouk University, Jordan**

1. Early Ransomware Detection System Based on Network Behavior  
*Hamdi Abu-Helo, Huthaifa I Ashqar*
2. Vulnerability Assessment and Risk Modeling of IoT Smart Home Devices  
*Mounika Baddula, Biplob Ray, Mahmoud Elkhodr, Adnan Anwar, Pushpika Hettiarachchi*
3. IoT-Enhanced Malicious URL Detection Using Machine Learning  
*Aysar Weshahi, Feras Dwaik, Mohammad Khouli, Huthaifa I Ashqar, Amani Shatnawi, Mahmoud Elkhodr*
4. Impact of IoT Technology and Social Networking Sites on Mothers, Teachers, and Children with Autism Spectrum Disorder in Jordan  
*Walaa Al-Sarayrah, Assia Abo-Zaitoon, Abdallah Aldosary, Rami Abdallah Tashtoush, Yahya Tashtoush*
5. A Survey Analysis of Internet of Things (IoT) Education across the Top 25 Universities in the United States  
*Omar Darwish, Abdallah Al-shorman, Anas Mohammad Ramadan AlSobeh, Yahya Tashtoush*

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**Lunch****11:30-12:30 (UTC+9) Japan Standard Time**

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## Parallel Sessions

12:30-14:00(UTC+9) Japan Standard Time  
05:30-07:00(UTC+2) CEST Time Zone (Rome, Italy)

### AINA-S28: Cloud and Service Computing I

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

1. Improved Purpose-Based Concurrency Control to Reduce the Electric Energy Consumption of a Server Cluster  
*Tomoya Enokido, Dilawaer Duolikun, Makoto Takizawa*
2. Implementation of a Cloud Base Voice Recognition Motor Control System for Omnidirectional Wheelchair  
*Keita Matsuo, Leonard Barolli*
3. DeFog: Adaptive Microservice Scheduling on Kubernetes Clusters in Cloud-Edge-Fog Infrastructures  
*Athanasios Prountzos, Euripides G.M. Petrakis*
4. Challenges, Novel Approaches and Next Generation Computing Architecture for Hyper-Distributed Platforms Towards Real Computing Continuum  
*Francesco Lubrano, Giuseppe Caragnano, Alberto Scionti, Olivier Terzo*
5. The Deployment of E-Learning Application as a Web Service in a Cloud Broker Architecture  
*Rihem Zorgati, Hassen Hqmdi, Khlil Ahmad Alsulbi*

### AINA-S29: Next Generation Wireless Networks II

**Session Chair: Shinji Sakamoto, Kanazwa Institute of Technology, Japan**

1. Adaptive Cost-Reward Scheduling for Optimizing Radio Utilization and Frequency Numerology Efficiency in B5G New Radio Networking  
*Wei-Teng Chang, Ben-Jye Chang*
2. Speed Control for Autonomous Vehicular Platoon  
*Anis Boubakri, Hajer Boujezza*
3. A Comparison Study of a Fuzzy-based Simulation System and Testbed for Selection of Radio Access Technologies in 5G Wireless Networks  
*Phudit Ampirit, Shunya Higashi, Paboth Kraikritayakul, Ermioni Qafzezi, Keita Matsuo, Leonard Barolli*
4. A Distributed Approach for Autonomous Landmine Detection Using Multi-UAVs  
*Amar Nath, Rajdeep Niyogi*
5. A Cuckoo Search Based Simulation System for Node Placement Problem in WMNs: Performance Evaluation for Normal, Exponential and Weibull Distributions of Mesh Clients  
*Shinji Sakamoto, Leonard Barolli, Yi Liu, Makoto Takizawa*

### AINA-S30: Intelligent Computing and Machine Learning IV

**Session Chair: Minoru Uehara, Toyo University, Japan**

1. Deep Reinforcement Learning for VNF placement and chaining of Cloud Network services  
*Wided Khemili, Jalel Eddine Hajlaoui, Mohand Yazid Saidi, Mohamed Nazih Omri, Ken Chen*
2. Optimising Water Quality Classification in Aquaculture Using a New Parameter Pre-selection Approach  
*Mahdi Hamzaoui, Mohamed Ould-Elhassen Aoueileyine, Lamia Romdhani, Ridha Bouallegue*
3. An Efficient Method for Underwater Fish Detection Using a Transfer Learning Techniques  
*Mahdi Hamzaoui, Mohamed Ould-Elhassen Aoueileyine, Lamia Romdhani, Ridha Bouallegue*
4. Framework for Cognitive Self-Healing of Real Broadband Networks  
*Enock Cabral Almeida Vieira, Paulo Carvalho, Flavio de Oliveira Silva*
5. LLM-based Agents Utilized in a Trustworthy Artificial Conscience Model for Controlling AI in Medical Applications  
*Davinder Kaur, Suleyman Uslu, Mimoza Durrezi, Arjan Durrezi*

**HWISE-S1: Heterogeneous Wireless Networks****Chair: Makoto Ikeda, Fukuoka Institute of Technology, Japan**

1. Handover Management Scheme in Macrocell-Femtocell Networks  
*Maroua Ben Gharbia, Ridha Bouallegue*
2. An  $\alpha$ -rotated Fourier Transform used as OTFS Enhancement  
*Marwa Rjili, Abdelhakim Khelifi, Fatma Ben Salah, Belghacem Chibani, Said Chniguir*
3. Monitoring a Rice Field with a Low-cost Wireless Sensor Network  
*Chaima Bejaoui, Nasreddine Hajlaoui*
4. Machine Learning based-RSSI Estimation Module in OMNET++ for Indoor Wireless Sensor Networks  
*Ghofrane Fersi, Mohamed Khalil Baazaoui, Rawdha Haddad, Faouzi Derbel*
5. Path Planning in UAV-Assisted Wireless Network: A Comprehensive Survey and Open Research Issues  
*Henda Hnaïen, Ahmed Aboud, Haifa Touati, Hichem Snoussi*
6. Design of Low Sidelobe Microstrip Antenna Array with Non-Uniform Excitation Amplitude based on Dolph-Tschebyscheff Synthesis at 28 GHz  
*Emna Jebabli, Mohamed Hayouni, Fethi Choubani*

**DUDW-S1: Digital Humanities and Digital World I****Chair: Alba Amato, University of Campania Luigi Vanvitelli, Italy**

1. Survival Strategies for IT Companies During Crisis: A Case Study of Russia  
*Mohammad Khalil, Manuel Mazzara*
2. Comparative Analysis of Ontologies for Archival Representation  
*Alba Amato, Giuseppe Cirillo*
3. Augmented Reality for Cyberphysical Exploration of Archaeological Sites  
*Luigi Alberico, Dario Branco, Antonio Coppa, Salvatore D'Angelo, Stefania Quilici Gigli, Giuseppina Renda, Salvatore Venticinque*
4. Research on Archive Digital Editing and Studying Mode  
*Jingyi Zeng*

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**Coffee Break****14:00-14:30(UTC+9) Japan Standard Time**

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**Parallel Sessions****14:30-16:00(UTC+9) Japan Standard Time  
07:00-08:30(UTC+2) CEST Time Zone (Rome, Italy)****AINA-S31 : Cloud and Service Computing II****Session Chair: Farookh Khadeer Hussain, University of Technology Sydney, Australia**

1. CarbonApp: Blockchain Enabled Carbon Offset Project Management  
*Yining Hu, Alistair McFarlane, Farookh Khadeer Hussain*
  2. Proposal for a Resource Allocation Model Aimed at Fog Computing  
*André Damato, Mario A R Dantas*
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3. Towards Priority VM Placement in Fog Networks  
*Asma Alkhalaf, Farookh Khadeer Hussain*
4. LoRa and Cloud-based Multi-robot Pesticide Spraying for Precision Agriculture  
*Nirali Kailesh Sanghvi, Rajdeep Niyogi*
5. Investigating the Impact of Congestion Control Algorithms on Edge-Cloud Continuum  
*Nicolas Keiji Cattani Sakashita, Mauricio Aronne Pillon, Charles Christian Miers, Guilherme Piêgas Koslovski*

### **AINA-S32 : Next Generation Wireless Networks III**

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

1. Performance Evaluation of FC-RDVM and LDIWM Router Replacement Methods for Small and Middle Scale WMNs Considering UNDX-M Crossover Method and Stadium Distribution of Mesh Clients  
*Admir Barolli, Shinji Sakamoto, Leonard Barolli, Makoto Takizawa*
2. A Filtering Method for Machine Learning Utilization of ADS-B Data  
*Koichi Kakimoto, Takahiro Immaru, Makoto Ikeda, Leonard Barolli*
3. PvFL-RA: Private Federated Learning for D2D Resource Allocation in 6G communication  
*Richa Kumari, Dinesh Kumar Tyagi, Ramesh Babu Battula*
4. RoHR: Regionalized Hierarchical Routing for Vehicular Networks  
*Cairo Aparecido Campos, Joao Carlos Giacomini and Tales Heimfarth*
5. Reducing Signaling Overhead in 5G Mobile Network for IoT Device Mobility  
*Takahiko Kato, Chikara Sasaki, Atsushi Tagami*

### **AINA-S33 : Intelligent Computing and Machine Learning V**

#### **Session Chair: Winston K. G. Seah, Victoria University of Wellington, New Zealand**

1. Hybrid Technical-Visual Features for Stock Prediction  
*Chih-Fong Tsai, Ya-Han Hu, Ming-Chang Wang, Kang Ernest Liu*
2. RsViT – a Scalable Vision Transformer Backbone for Diffusion Model  
*Thanawin Sakpuaram, Chantana Chantrapornchai*
3. A Deep Neural Network (DNN) Based Contract Policy on Hyperledger Fabric for Secure Internet of Things (IoTs)  
*Sabina Sapkota, Haojun Huang, Yining Hu, Farookh Khadeer Hussain*
4. Realtime BGP Anomaly Detection using Graph Centrality Features  
*Janel Huang, Murugaraj Odiatevar, Alvin C Valera, Jyoti Sahni, Marcus Frean, Winston K.G. Seah*
5. Hybrid Evolutionary Algorithm for the Overlap Constrained Resource Allocation Problem in Wireless Networks  
*Yiting Wang, Yawen Li, Zequn Wei, Junqi Li*

### **FINA-S2: Frontiers of Information Systems and Network Applications II**

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

1. Improving ML/DL Solutions for Anomaly Detection in IoT Environments  
*Nouredine Tamani, Saad El Jaouhari, Abdul Qadir Khan, Bastien Pauchet*
2. A Survey and Planning Advice of Blockchain-Based Used Car Bidding Platform  
*Chin-Ling Chen, Yong-Yuan Deng, Yao-Yuan Hsu, Hsing-Chung Chen, Der-Chen Huang, Ling-Chun Liu*
3. Misuse Detection and Response for Orchestrated Microservices Based Software  
*Mohamed Aly Amin, Adnan Harun Dogan, Elif Sena Kuru, Yigit Sever, Pelin Angin*
4. Quantum Microservices: Transforming Software Architecture with Quantum Computing  
*Suleiman Karim Eddin, Hadi Salloum, Mohamad Nour Shahin, Badee Salloum, Manuel Mazzara, Mohammad Reza Bahrami*

**DUDW-S2: Digital Humanities and Digital World II****Chair: Salvatore Venticinque, University of Campania Luigi Vanvitelli, Italy**

1. An Ontology for the Annotation of the Archives of The Royal Site of San Leucio  
*Alba Amato, Angelo Di Falco*
  2. An Architecture for Metadata and Semantic Annotation of historical Archives  
*Alba Amato, Dario Branco, Salvatore Venticinque*
  3. Social Robots and Edge Computing: Integrating Cloud Robotics in Social Interaction  
*Theodor-Radu Grumeza, Thomas-Andrei Lazar, Alexandra-Emilia Fortis*
  4. Fine-Tuned CNN for Clothing Image Classification on Mobile Edge Computing  
*Diogen Babuc, Alexandra-Emilia Fortis*
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**Coffee Break****16:00-16:30(UTC+9) Japan Standard Time**

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**Banquet Party****18:00-20:00(UTC+9) Japan Standard Time**  
ART HOTEL Kokura New Tagawa (3rd floor, Hana)

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## AINA-2024 Session Schedule

### Hybrid Meeting Schedule for AINA-2024, 17 April to 19 April, 2024

1 <sup>st</sup> day: Wednesday, 17 April, 2024	Room #1 Meeting ID: 839 6585 1885		Room #2 Meeting ID: 831 4121 5860		Room #3 Meeting ID: 862 3088 6458		Room #4 Meeting ID: 832 4852 1420		Room #5 Meeting ID: 828 6826 2119		Room #6 Meeting ID: 823 3335 0030	
	Session title	Session Chair	Session title	Session Chair	Session title	Session Chair	Session title	Session Chair	Session title	Session Chair	Session title	Session Chair
<b>Slot 1</b> 10:00-11:00 (UTC+9) Japan Standard Time 03:00-04:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>AINA-2024 Keynote #1: Prof. Fates Khafa</b> Meeting ID: 839 6585 1885											
<b>Slot 2</b> 11:30-12:30 (UTC+9) Japan Standard Time 04:30-05:30 (UTC+2) CEST Time Zone (Rome, Italy)	<b>Coffee Break</b>											
<b>Slot 3</b> 13:00-14:00 (UTC+9) Japan Standard Time 05:00-06:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>AINA-S1</b>	Lisandro Zambenedetti Granville, Brazil	<b>AINA-S2</b>	Tomoya Enokido, Japan	<b>AINA-S3</b>	Minoru Uehara, Japan	<b>AINA-S4</b>	Leonard Barolli, Japan	<b>NetSMM-S1</b>	Marco Antonio To, Guatemala	<b>CCPI-S1</b>	Rocco Aversa, Italy
<b>Slot 4</b> 14:30-15:30 (UTC+9) Japan Standard Time 07:00-08:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>Lunch</b>											
<b>Slot 5</b> 16:00-17:00 (UTC+9) Japan Standard Time 08:00-09:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>AINA-S5</b>	Marek R Ogjela, Poland	<b>AINA-S6</b>	Ashutosh Bhatia, India	<b>AINA-S7</b>	Chung-Ming Huang, Taiwan	<b>AINA-S8</b>	Yong Zheng, USA	<b>BiCom-S1</b>	Eviola Spaho, Albania	<b>CCPI-S2</b>	Dario Branco, Italy
<b>Slot 6</b> 18:00-19:00 (UTC+9) Japan Standard Time 09:00-10:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>Coffee Break</b>											
<b>Slot 7</b> 19:30-20:00 (UTC+9) Japan Standard Time	<b>AINA-S9</b>	Leonard Barolli, Japan	<b>AINA-S10</b>	Eurjides G. M. Petakakis, Greece	<b>AINA-S11</b>	Yoshiroka Shibata, Japan	<b>AINA-S12</b>	Enver Ever, Turkey	<b>E3WSN-S1</b>	Leonardo Mostarda, Italy	<b>CCPI-S3</b>	Antonio Esposito, Italy
<b>Reception Party at Kitakyushu International Conference Center (1st floor, Event hall)</b>												
<b>2nd day: Thursday, 18 April, 2024</b>	Room #1 Meeting ID: 839 6585 1885		Room #2 Meeting ID: 831 4121 5860		Room #3 Meeting ID: 862 3088 6458		Room #4 Meeting ID: 832 4852 1420		Room #5 Meeting ID: 828 6826 2119		Room #6 Meeting ID: 823 3335 0030	
<b>Slot 1</b> 10:00-11:00 (UTC+9) Japan Standard Time 03:00-04:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>AINA-2024 Keynote #2: Dr. Juggespong Natwichai</b> Meeting ID: 839 6585 1885											
<b>Slot 2</b> 11:30-12:30 (UTC+9) Japan Standard Time 04:30-05:30 (UTC+2) CEST Time Zone (Rome, Italy)	<b>Coffee Break</b>											
<b>Slot 3</b> 13:00-14:00 (UTC+9) Japan Standard Time 05:00-06:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>AINA-S13</b>	Kin Fun Li, Canada	<b>AINA-S14</b>	Mario A R Dantas, Brazil	<b>AINA-S15</b>	Felicio de Oliveira Silva, Brazil	<b>AINA-S16</b>	Carson K. Leung, Canada	<b>INTRICATE-SEC-S1</b>	Anne Kayem, UK	<b>CCPI-S4</b>	Salvatore D'Angelo, Italy
<b>Slot 4</b> 14:30-15:30 (UTC+9) Japan Standard Time 07:00-08:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>Lunch</b>											
<b>Slot 5</b> 16:00-17:00 (UTC+9) Japan Standard Time 08:00-09:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>AINA-S17</b>	Masakatsu Nishigaki, Japan	<b>AINA-S18</b>	Hsing-Chung Chen, Taiwan	<b>AINA-S19</b>	Leonard Barolli, Japan	<b>AINA-S20</b>	Dahlan Nariman, Japan	<b>M2EC-S1</b>	Thomas Dreiholzb, Norway	<b>CCPI-S5</b>	Antonio Esposito, Italy
<b>Slot 6</b> 18:00-19:00 (UTC+9) Japan Standard Time 09:00-10:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>Coffee Break</b>											
<b>Slot 7</b> 19:30-20:00 (UTC+9) Japan Standard Time	<b>AINA-S21</b>	Leonardo Mostarda, Italy	<b>AINA-S22</b>	Alfredo Navarra, Italy	<b>AINA-S23</b>	Farookh Khadeer Hussain, Australia	<b>AINA-S24</b>	Lidia Ogjela, Poland	<b>FINA-S1</b>	Nour El Madhoun, France	<b>CCPI-S6</b>	Bestamino Di Mariano, Italy
<b>3rd day: Friday, 19 April, 2024</b>	Room #1 Meeting ID: 839 6585 1885		Room #2 Meeting ID: 831 4121 5860		Room #3 Meeting ID: 862 3088 6458		Room #4 Meeting ID: 832 4852 1420		Room #5 Meeting ID: 828 6826 2119		Room #6 Meeting ID: 823 3335 0030	
<b>Slot 1</b> 10:00-11:00 (UTC+9) Japan Standard Time 03:00-04:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>AINA-S25</b>	Arjan Durresi, USA	<b>AINA-S26</b>	Isaac Woungang, Canada	<b>AINA-S27</b>	Mario A R Dantas, Brazil	<b>MAW-S1</b>	Kin Fun Li, Canada	<b>COLLABES-S1</b>	Keita Matsuo, Japan	<b>DIAC-S1</b>	Anas Muhammad Ramadan AlSobeih, Jordan
<b>Slot 2</b> 11:30-12:30 (UTC+9) Japan Standard Time 04:30-05:30 (UTC+2) CEST Time Zone (Rome, Italy)	<b>Lunch</b>											
<b>Slot 3</b> 13:00-14:00 (UTC+9) Japan Standard Time 05:00-06:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>AINA-S28</b>	Tomoya Enokido, Japan	<b>AINA-S29</b>	Shinji Sakamoto, Japan	<b>AINA-S30</b>	Minoru Uehara, Japan	<b>HWISE-S1</b>	Makoto Ikeda, Japan	<b>DUDW-S1</b>	Alba Amato, Italy		
<b>Slot 4</b> 14:30-15:30 (UTC+9) Japan Standard Time 07:00-08:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>Coffee Break</b>											
<b>Slot 5</b> 16:00-17:00 (UTC+9) Japan Standard Time 08:00-09:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>AINA-S31</b>	Farookh Khadeer Hussain, Australia	<b>AINA-S32</b>	Makoto Ikeda, Japan	<b>AINA-S33</b>	Winston K. G. Seah, New Zealand	<b>FINA-S2</b>	Tomoya Enokido, Japan	<b>DUDW-S2</b>	Salvatore Ventricone, Italy		
<b>Slot 6</b> 18:00-19:00 (UTC+9) Japan Standard Time 09:00-10:00 (UTC+2) CEST Time Zone (Rome, Italy)	<b>Coffee Break</b>											
<b>Slot 7</b> 19:30-20:00 (UTC+9) Japan Standard Time	<b>Banquet Party at ART HOTEL Kokura New Tagawa (3rd floor, Main)</b>											