# Advance Program 2022



**Hybrid Events: 22-24 August 2022** 

Time Zone: CEST [Rome, Italy]
[Link to CEST Time Zone]

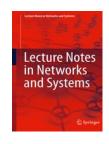
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# Advance Program 2022



## FiCloud 2022

The 9<sup>th</sup> International Conference on Future Internet of Things and Cloud



## MobiWis 2022

The 18<sup>th</sup> International Conference on Mobile Web and Intelligent Information Systems



#### **DBB 2022**

The 3<sup>rd</sup> International Conference on Deep Learning, Big Data and Blockchain

### **EMSICC 2022**

**EMSICC** 

The 8<sup>th</sup> International Workshop on Energy Management for Sustainable Internet-of-Things and Cloud Computing

# **MobiApps 2022**

**MobiApps** 

The 8<sup>th</sup> International Workshop on Mobile Applications

**ICI 2022** 

ICI

The 8<sup>th</sup> International Symposium on Intercloud and IoT

#### **General Information**

 The conferences will be held onsite in Rome as well as online via the videoconferences service, Zoom.

The following information is applicable to presentation via Zoom.

- Authenticated access will be given to participants who registered for the conferences. Participants are requested to get familiarize themselves with the Zoom.
- Paper presentations will be given in a live online format at the scheduled times, via Zoom. Check the conference program for date/time of paper presentation.
- Each paper will have around 20 minutes for presentation, followed by Q/A.
- The main delivery mode of presentations will be in a live format via Zoom. But authors are required to provide a link to their pre-recorded presentation video which will be used as backups in case of Internet failure. Please make sure that the pre-recorded video is remotely accessible via the link being shared. Use (Ctrl+Click) the following emails for sharing the links to pre-recorded videos:
  - o FiCloud 2022
  - o MobiWis 2022
  - o DBB 2022

#### **KEYNOTE**

#### Moving AI Applications to the 5G Cloud Continuum

Prof. Ernesto Damiani Khalifa University, UAE Università degli Studi di Milano, Italy

#### **Summary:**

AI-ML applications are often implemented as cloud-based orchestrations, taking advantages of services and data management platforms made available on public or private clouds. Today, the need to guarantee low execution latency and high throughput while preserving data confidentiality has extended the scope of orchestrations to include edge devices and, more and more, the mobile network operators' core network. The talk outlines the research lines and open challenges facing development and deployment of distributed, low latency AI applications.

#### **Biography:**

Ernesto Damiani is a Full Professor at Università degli Studi di Milano (Italy), Senior Director of the Robotics and Intelligent Systems Institute, and Director of Center for Cyber Physical Systems (C2PS) within Khalifa University (UAE). He is the leader of the Big Data area at Etisalat British Telecom Innovation Center (EBTIC), and President of the Consortium of Italian Computer Science Universities (CINI). He is also part of the ENISA Ad-Hoc Working Group Artificial Intelligence on Cybersecurity. Ernesto's areas of interest include cyber-physical systems, Data Analytics, Edge/Cloud security and performance, Artificial Intelligence, and Machine Learning. Ernesto Damiani has pioneered modeldriven data analytics. He has authored more than 670 Scopus-indexed publications and several patents. He has been a recipient of several awards, which include: The Research and Innovation Award from the IEEE Technical Committee on Homeland Security; The Stephen Yau Award from the Service Society; of the Outstanding contributions Award from IFIP TC2; The Chester-Sall Award from IEEE IES; The IEEE TCHS Research and Innovation Award; and a doctorate honoris causa from INSA - Lyon (France) for his contribution to Big Data teaching and research.

#### **KEYNOTE**

#### Chatbots as Conversational Interfaces – Status quo, Development Challenges, and Research Topics

Prof Stephan Böhm
RheinMain University of Applied Sciences
Germany

#### **Summary:**

Chatbots are novel computer-based dialog systems that support natural language conversation. They represent a paradigm shift on the Web. While conventional web browsing focuses on searching and finding, interaction with chatbots is based on asking questions and receiving answers. Initial experimental approaches to such systems date back to the 1960s. However, advances in AI have led to more sophisticated solutions and greater commercial adoption of chatbots in recent years. Chatbots can support and automate communication processes in many areas. During the last decade, numerous frameworks and technical platforms emerged to support chatbot development. In practice, there are many case studies of chatbot implementations. However, today's chatbot solutions often do not yet meet the users' expectations. The keynote will first briefly present the technical basics and challenges of chatbots' conversational user interface design. In addition, the status quo of chatbot solutions is discussed using the German market as an example. Finally, selected research work and research questions in the field of chatbots will be presented.

#### **Biography:**

Dr. Böhm is a telecommunications and mobile media professor, head of the bachelor's program in International Media Management, and dean of studies at the Faculty of Design Computer Science Media at the RheinMain University of Applied Sciences. He studied industrial/electrical engineering at the Technical University of Darmstadt and received his doctoral degree at the University of Duisburg with work on innovation marketing for 3G mobile services. Before joining RheinMain University of Applied Sciences in 2006, he worked for the leading strategy and technology consulting firm Booz Allen Hamilton in Berlin and Düsseldorf. Professor Böhm co-founded the CAEBUS Center for Advanced E-Business Studies and the Mobile Media Forum in Wiesbaden. In addition, he was a visiting professor at the International College of NIDA in Bangkok, Thailand, and the Turkish-German University in Istanbul, Turkey. His current research focuses on interactive media innovations, technology acceptance research, and mobile HCI. Professor Böhm is the author of more than 90 articles and a committee/editorial board member of several academic conferences and journals.

09:00-09:30	Opening Session
	Conference Opening and Welcome
Onsite Room	Room 1
Online Zoom	Room1-Link

09:30-10:30	Plenary Session: Keynote 1
	Chatbots as Conversational Interfaces – Status quo, Development Challenges, and Research Topics
	Prof Stephan Böhm, RheinMain University of Applied Sciences, Germany
Session Chair	Irfan Awan, University of Bradford, UK
Onsite Room	Room 1
Online Zoom	Room1-Link

10:30-11:00 Coffee Break
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11:00-12:30	FiCloud Session 1: Evaluation of Cloud Systems and Resources
Session Chair	Helen D. Karatza, Aristotle University of Thessaloniki, Greece
Onsite Room	Room 1
Online Zoom	Room1-Link

The Effect of Laxity of Real-Time Workflow Applications on the Performance of Elastic Cloud Resources

Georgios L. Stavrinides and Helen D. Karatza

Towards a Message Broker Free FaaS for Distributed Dataflow Applications Patrik Fortier, Frédéric Le Mouël and Julien Ponge

Evaluating Deep Packet Inspection in Large-scale Data Processing Fabrizio Angiulli, Angelo Furfaro, Domenico Saccà and Ludovica Sacco

A QoS-aware, Proactive Tasks Offloading Model for Pervasive Applications Georgios Boulougaris and Kostas Kolomvatsos

11:00-12:30	MobiWis Session 1: Mobile Technologies and Applications
Session Chair	Ludger Martin, RheinMain University of Applied Sciences, Germany
Onsite Room	Room2
Online Zoom	Room2-Link

Knowledge Behavior Gap Model: An Application for Technology Acceptance Agnis Stibe, Nicolai Krüger and Alina Behne

UI-Re-Engineering of a Mobile Documentation Software in the Care Sector Sergio Staab, Ludger Martin and Anika Degreif

GUI Element Detection from Mobile UI Images Using YOLOv5 Mehmet Dogan Altinbas and Tacha Serif

11:00-12:30	DBB Session 1: Blockchain and Applications
Session Chair	Mustafa Sanli, Aselsan, Turkey
Onsite Room	Room 3
Online Zoom	Room3-Link

Apply Trust Computing and Privacy Preserving Smart Contracts to Manage, Share, and Analyze Multi-site Clinical Trial Data Yusen Wu, Chao Liu, Lawrence Sebald, Phuong Nguyen, and Yelena Yesha

Design Principles for Interoperability of Private Blockchains Suha Bayraktar and Sezer Gören

Blockchain for Proposal Management *Mustafa Sanli* 

12:30-13:30	Lunch Break
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13:30-15:00	FiCloud Session 2: Security and Privacy
Session Chair	Georgios L. Stavrinides, Aristotle University of Thessaloniki, Greece
Onsite Room	Room 1
Online Zoom	Room1-Link

DDoS Attack Detection and Mitigation in Software- Defined Networking-Based 5G Mobile Networks with Multiple Controllers

Morteza Sheibani, Savas Konur and Irfan Awan

Security Constraints for Placement of Latency Sensitive 5G MEC Applications Rafał Artych, Krzysztof Bocianiak, Yannick Carlinet, Wojciech Niewolski, Nancy Perrot, Aleksandra Podlasek and Jean-Philppe Wary

Dynamic Delegation-based Privacy Preserving in IoT Architectures Catarina Silva and Joao Paulo Barraca

A Homomorphic Encryption Service to Secure Data Processing in a Cloud/Edge Continuum Context Alessio Catalfamo, Antonio Celesti, Maria Fazio and Massimo Villari

13:30-15:00	MobiWis Session 2: Mobile Devices and Automous Vehicles
Session Chair	Tor-Morten Grønli, Kristiania University College, Norway
Onsite Room	Room2
Online Zoom	Room2-Link

Active Federated YOLOR Model for Enhancing Autonomous Vehicles Safety Gaith Rjoub, Jamal Bentahar and Y. A. Joarder

Neural Network for Public Transport Mode Inference on Mobile Devices Anders Skretting and Tor-Morten Grønli

Data-Driven Federated Autonomous Driving

Ahmad Hammoud, Azzam Mourad, Hadi Otrok and Zbigniew Dziong

13:30-15:00	DBB Session 2: Machine and Deep Learning
Session Chair	Jamal Bentahar, Concordia University, Canada
Onsite Room	Room 3
Online Zoom	Room3-Link

One-Shot Federated Learning-based Model-Free Reinforcement Learning Gaith Rjoub, Jamal Bentahar, Omar Abdel Wahab and Nagat Drawel

A New Approach for Selecting Features in Cancer Classification Using Grey Wolf Optimizer

Halah Almazrua and Hala Alshamlan

A Smart Video Surveillance System for Helping Law Enforcement Agencies in Detecting Knife related Crimes

Raed Abdallah, Salima Benbernou, Yehia Taher, Muhammad Younas and Rafiqul Haque

Biologically Inspired Variational Auto-Encoders for Adversarial Robustness Sameerah Talafha, Banafsheh Rekabdar, Christos Mousas and Chinwe Ekenna

15:00-15:30	Coffee Break

15:30-17:00	FiCloud Session 3: Data Centres and Storages
Session Chair	Ingrid Palma, University of Brasilia, Brazil
Onsite Room	Room 1
Online Zoom	Room1-Link

Data center disaggregation: when and how much? Thomas Begin, Alexandre Brandwajn and Alain Tchana

Methods for Transferring Data from a Compute to a Storage Cloud Juan Contreras, Shikharesh Majumdar and Ali El-Haraki

A Study of Live VM Migration for Server Consolidation in Data Centers Alexandre Brandwajn, Thomas Begin, Hind Castel and Tulin Atmaca

Data-driven Analytics Task Management at the Edge: A Fuzzy Reasoning Approach

Tahani Aladwani, Ibrahim Alghamdi, Christos Anagnostopoulos and Kostas Kolomvatsos

15:30-17:00	MobiWis Session 3: Security in Healthcare and Smart Cities Environment
Session Chair	Hana Svecova, University Hradec Kralove, Czech Republic
Onsite Room	Room 2
Online Zoom	Room2-Link

Case Study on a Session Hijacking Attack: The 2021 CVS Health Data Breach

Aversa Prentosito, McKenna Skoczen, Lauren Kahrs and Suman Bhunia

Blockchain for Cybersecure Healthcare Avnish Singh Jat and Tor-Morten Grønli

Design of a Method for Setting IoT Security Standards in Smart Cities Hana Svecova

15:30-17:00	DBB Session 3: Blockchain Technology and Protocols
Session Chair	Amel Bella Baci, TRIMANE, Paris, France
Onsite Room	Room 3
Online Zoom	Room3-Link

Detecting Illicit Ethereum Accounts based on their Transaction History and Properties using Machine Learning

Amel Bella Baci, Kei Brousmiche, Ilias Amal, Fatma Abdelhédi and Lionel Rigaud

Identifying Incentives for Extortion in Proof of Stake Consensus Protocols Alpesh Bhudia, Anna Cartwright, Edward Cartwright, Julio Hernandez-Castro, and Darren Hurley-Smith

Three-valued Model Checking Smart Contract Systems with Trust under Uncertainty

Ghalya Alwhishi, Jamal Bentahar and Ahmed Elwhishi

17:00-18:00	FiCloud Session 4: Energy Efficiency
Session Chair	Mário Antunes, Universidade de Aveiro, Portugal
Onsite Room	Room 1
Online Zoom	Room1-Link

Clustered Server Consolidation for Energy Efficient Cloud Deniz Tuana Ergönül and Onur Demir

CV and IoT-based Remote Triggered Labs: Use Case of Conservation of Mechanical Energy

K.S. Viswanadh, Om Kathalkar, Piyusha Vinzey, Nitin Nilesh, Sachin Chaudhari and Venkatesh Choppella

Energy Consumption Characterization in University Campus Microgrid Based on Power Data Analysis

Imad Hajjaji, Hassan El Alami, Rafiq El Alami and Hamza Dahmouni

17:00-18:00	<b>MobiWis Session 4: Advanced Information Systems</b>
Session Chair	Bilgin Umut Deveci, TEKNOPAR, Turkey
Onsite Room	Room 2
Online Zoom	Room2-Link

Towards the use of IT technologies for health literacy and health information competences – a case study

Marta Chmielewska-Anielak, Aneta Poniszewska-Maranda and Agnieszka Renn-Zurek

A Systematic Literature Review on Relationship between Internet Usage Behavior and Internet QoS in Campus Zhang Lei and Nor Shahniza Binti Kamal Bashah

Model Checking Intelligent Information Systems with 3-Valued Timed Commitments

Ghalya Alwhishi, Nagat Drawel and Jamal Bentahar

17:00-18:00	EMSICC Session: Energy Management in Sustainable IoT and Cloud Computing
Session Chair	Samia Bouzefrane, CNAM, France
Onsite Room	Room 3
Online Zoom	Room3-Link

Robust approach for host-overload detection based on dynamic safety parameter

Imene El-Taani, Mohand-Cherif Boukala, Samia Bouzefrane and Anissa Imen Amrous

Towards Possibilities of Energy Minimization in Consensus and Mining Paradigm

Lydia Ouaili, Soumya Banerjee and Elena Kornyshova

Cluster based Indoor Localization for Energy Consumption Enhancement Céline Serbouh, Iness Ahriz, Wafa Njima and Amina Lammari

19:30-21:30	Welcome Reception
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09:30-10:30	Plenary Session: Keynote 2
	Moving AI Applications to the 5G Cloud Continuum  Prof Ernesto Damiani, Khalifa University, UAE and Università degli Studi di Milano, Italy
Session Chair	Muhammad Younas, Oxford Brookes University
Onsite Room	Room 1
Online Zoom	Room1-Link

10:30-11:00	Coffee Break
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11:00-12:30	FiCloud Session 5: Deep Learning
Session Chair	Patrik Fortier, INSA Lyon, France
Onsite Room	Room 1
Online Zoom	Room1-Link

Lightweight Hybrid Deep Learning Scheme for Automatic Modulation Classification in Cognitive Radio Networks Nadia Kassri, Abdeslam Ennouaary and Slimane Bah

From Mushroom-Peaches to Disease Prediction: Deep Learning Approaches Zainab Loukil and Qublai Khan Ali Mirza

Fingerprint Liveness Detection Using Deep Learning
Zeynep İnel Özkiper, Zeynep Turgut, Tülin Atmaca and Muhammed Ali Aydin

SCN-DRL: Scheduler for large-scale Critical Notification applications based on Deep Reinforcement Learning

Mira Vrbaski, Miodrag Bolic and Shikharesh Majumdar

11:00-12:30	MobiWis Session 5: Smart Systems and Applications
Session Chair	Johannes Brill, Ilmenau University of Technology, Germany
Onsite Room	Room 2
Online Zoom	Room2-Link

What is a Smart Service?

Johannes Brill and Volker Nissen

SSSB: An Approach to Insurance for Cross-Border Exchange by using Smart Contracts

Khoi Le Quoc, Hong Khanh Vo, Luong Hoang Huong, Khiem Huynh Gia, Khoa Tran Dang, Hieu Le Van, Nghia Huynh Huu, Tran Nguyen Huyen, The Anh Nguyen, Loc Van Cao Phu, Duy Nguyen Truong Quoc, Bang Le Khanh, and Ha Xuan Son

A Review: Sensors Used in Tool Wear Monitoring and Prediction Perin Ünal, Bilgin Umut Deveci and Ahmet Murat Özbayoğlu

11:00-12:30	MobiApps Session 1: Mobile Applications I
Session Chair	Saeed Sharif, University of East London, UK
Onsite Room	Room 3
Online Zoom	Room3-Link

A Physical Layer Security (PLS) approach through Address Fed Mapping Crest Factor Reduction applicable for 5G/6G signals Somayeh Mohammady and David Malone

Mobile Phone Data Usage Analysis Among Youths Studying at Universities Saeed Sharif, Wael Elmedany and Godwin Onyewumbu

AI Assisted Medical Diagnosis of Lung Diseases Using Accurate Symptoms Visualization

Maha Yaghi, Sana Hafez, Arwa Sheibani, Abdalla Abdelkhalek, Zia Farhan, Mohammed A. Ghazal, Ayman ElBaz and Adel Khelifi

Secure Proctoring of Contactless Handwritten-Assessments with Insufficient Computing Resources using Smartphones

Maha Yaghi, Zia Farhan, Lana Qamhieh, Marah Alhalabi, Mohamad M Hammoudi, Mohammed Yaghi and Mohammed A. Ghazal

12:30-13:30	Lunch Break

13:30-15:00	FiCloud Session 6: Fog and Edge Computing
Session Chair	Mário Antunes, Universidade de Aveiro, Portugal
Onsite Room	Room 1
Online Zoom	Room1-Link

Distributed Synchronous Particle Swarm Optimization for Edge Computing Riccardo Busetti, Nabil El Ioini, Hamid Reza Barzegar and Claus Pahl

Asynchronous Distributed Particle Swarm Optimization for Edge Cloud Architectures

Riccardo Busetti, Hamid Reza Barzegar, Nabil El Ioini and Claus Pahl

Towards Robust Fog/Edge Computing Infrastructure with Risk Adjusted Multi-Connectivity

Vladimir Marbukh

Adaptive Resource Dimensioning with Joint Workload Placement for Cloud Stack Layers

Carla Mouradian, Wubin Li, Akos Recse and Róbert Szabó

13:30-15:00	<b>MobiWis Session 6: Software-Defined Networks</b>
Session Chair	Saw Chin Tan, Multimedia University, Malaysia
Onsite Room	Room 2
Online Zoom	Room2-Link

Mathematical Models for Minimizing Latency in Software-Defined Networks Pablo Adasme, Andres Viveros, Ali Dehghan Firoozabadi and Ismael Soto

Analyzing the Impact of DNN Hardware Accelerators-Oriented Compression Techniques on General-Purpose Low-End Boards

Giuliano Canzonieri, Salvatore Monteleone, Maurizio Palesi, Enrico Russo and Davide Patti

Spatial Dependency in Software-Defined Networking In-Band Monitoring: Challenges and Future Perspective Jun Nan Chin and Saw Chin Tan

13:30-15:00	MobiApps Session 2: Mobile Applications 2
Session Chair	Hurma Ehtesham, Abu Dhabi University, UAE
Onsite Room	Room 3
Online Zoom	Room3-Link

Secure IoT Data Transmission at Physical Layer using RC6 Encryption Technique

Afia Murad Ashraf, Wael M Elmedany and Saeed Sharif

A Reliable Handless System for Elevators Using Touchless Technology Adel Khelifi, Aveen Muhamad, Hurma Ehtesham and Mohammed A. Ghazal

Mobile Deep Classification of UAE Banknotes for the Visually Challenged Ashraf Khalil, Maha Yaghi, Tasnim Basmaji, Mohamed Faizal, Zia Farhan, Ali Ali and Mohammed A. Ghazal

15:30-17:00	FiCloud Session 7: Cloud, IoT and Case Studies
Session Chair	Marcin Bajer, ABB Corporate Technology Center, Krakow, Poland
Onsite Room	Room 1
Zoom Link	Room1-Link

Verifying Timed Commitment Specifications for IoT-Cloud Systems with Uncertainty

Ghalya Alwhishi, Jamal Bentahar and Ahmed Elwhishi

Securing and Hardening Embedded Linux Devices – case study based on NXP i.MX6 Platform

Marcin Bajer

Multi-objective optimization for cloud provisioning: A case study in largescale microservice notification applications

Mira Vrbaski, Miodrag Bolic and Shikharesh Majumdar.

A Thorough Analysis and Comparison of Data Communication Protocols Used in Industry 4.0; the Case of Smart-CNC

Bilgin Umut Deveci, Hilal Baş, Emre Ummak, Özlem Albayrak and Perin Unal

15:30-17:00	FiCloud Session 8: Smart Applications and Services
Session Chair	Antonio Celesti, University of Messina, Italy
Onsite Room	Room 2
Zoom Link	Room2-Link

Improving IoT-based Smart Retrofit Model for Analog Water Meters using DL based Algorithm

Ayush Kumar Lall, Ansh Khandelwal, Nitin Nilesh and Sachin Chaudhari

HolonCraft – An Architecture for Dynamic Construction of Smart Home Workflows

Zhuo Wang, Yehia Elkhatib and Abdessalam Elhabbash

Measure It Yourself – Why Smart Cities Need Custom Weather Data Sources Raphaela Erbel and Philipp Brune

Improve Contextual IoT service discovery with semantic models Mário Antunes, José Quevedo, Diogo Gomes and Rui Aguiar

Sabine: Self-Adaptive BlockchaIn consensus

Guilain Leduc, Sylvain Kubler and Jean-Philippe Georges

15:30-17:00	FiCloud Session 9: Data Sources and Services
Session Chair	Catarina Silva, Universidade de Aveiro, Portugal
Onsite Room	Room 3
Zoom Link	Room3-Link

Design and Evaluation of IoT Gateway for Data Prioritization based on Van Emde Boas Tree

Ingrid Palma Araújo, Ronaldo C. R. de Araújo, Michel Alves Ribeiro, Edison Ishikawa, Ana C. B. Reis and Christiano A. M. Rodopoulos

A Data Mining System for Enhancing Profit Growth based on RFM and CLV Lahcen Abidar, Ikram Elasri, Dounia Zaidouni and Abdeslam Ennouaary

A Graph-based Solution to Deal with Cyclic Dependencies in Microservices Architecture

Hassan Farsi, Driss Allaki, Abdeslam En-Nouaary and Mohamed Dahchour

Infrastructure Capability Aggregation and Exposure in Cloud Environments Ákos Recse, Róbert Szabó, Carla Mouradian and Wubin Li

19:30-21:30	Conference Dinner
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