

**TACC 2021**

**Tunisian-Algerian Joint  
Conference on Applied  
Computing**

**December 18 – 20, 2021  
Tabarka, Tunisia**

## Preface

The Tunisian Algerian Conference on Applied Computing (TACC 2021) is a platform for keeping up with advances and changes to a consistently evolving field. Leading researchers and industry experts from Tunisia and Algeria will be presenting the latest studies through papers and oral presentations. This conference edition is dedicated to the study of applied research of real-world problems. It aims to address, both theoretical and applied computer science issues. In addition, a one-day workshop (SoSAA 2021) is held in conjunction with the conference which focuses on the system-of-systems architecture and applications. The TACC 2021 contributions are devoted to the following fields, but is not limited to:

- Artificial Intelligence and Agents
- Distributed Systems
- Information Systems
- Software Engineering
- Software Architecture
- System and Software Security
- Algorithms, automata, and complexity
- Logic, semantics, and theory of programming
- Static analysis, verification, and testing

In response to the call for papers, 27 papers were submitted. Each paper was reviewed by at least three reviewers and evaluated based on the originality, quality, and relevance to the conference topics. The Program Committee selected 18 papers (14 as full papers and 4 as Emerging research papers) for publication in the proceedings and presentation at the Conference. The program was completed with excellent invited talks given by Leila Ben Ayed (University of la Manouba, Tunisia) and Elyes Lamine (Institut National Universitaire Champollion, France).

We would like to express our appreciation to the authors of the submitted papers, the Program Committee members, and the external reviewers. We owe special thanks to the Organizing Committee members for the hard work they did locally in Tabarka.

December 2021

Meriem Belguidoum

Faiza Belala

Slim Kallel

Ahmed Hadj Kacem

Mohamed Jmaiel

Ismail Bouassida

## Conference chairs

- Meriem Belguidoum, University of Constantine2, Algeria
- Faiza Belala, University of Constantine2, Algeria
- Ahmed Hadj Kacem, University of Sfax, Tunisia
- Mohamed Jmaiel, University of Sfax, Tunisia

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- Ahmed Hadj Kacem, University of Sfax, Tunisia
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- Allaoua Chaoui, University of Constantine2, Algeria
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- Chaker Mezioud, University of Constantine2, Algeria
- Djamel Benmerzoug, University of Constantine2, Algeria
- Faiez Gargouri, University of Sfax, Tunisia
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- Fouzia Benchikha, University of Constantine2, Algeria
- Hatem hadj Kacem, University of Sfax, Tunisia
- Ilham Kitouni, University of Constantine2, Algeria
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- Khalil Drira, University of Toulouse, France
- Khouloud Boukadi, University of Sfax, Tunisia
- Leila Ben Ayed, University of Mannouba, Tunisia
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- Larbi Sekhri, University of Oran, Algeria
- Lotfi Ben Romdhane, University of Sousse, Tunisia
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- Meriem Belguidoum, University of Constantine2, Algeria
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- Mohamed Hammami, University of Sfax, Tunisia
- Mohamed Jmaiel, University of Sfax, Tunisia
- Mohamed Mosbah, University of Beaurdeaux, France
- Mohamed Sellami, Institut Polytechnique de Paris, France
- Moufida Maimour, Université de Lorraine, France
- Mouna Torjmen, University of Sfax, Tunisia
- Mustapha Kamel Abdi, University of Oran, Algeria
- Nabil Hameurlain, University of Pau, France
- Nacer Eddine Zarour, University of Constantine2, Algeria
- Nadia Zeghib, University of Constantine2, Algeria
- Nardjes Bouchemal, Centre universitaire de Mila, Algérie
- Narjes Bellamine, University of Manouba, Tunisia

- Nasser-Eddine Rikli, Saud University, KSA
- Ouajdi Korbaa, University of Sousse, Tunisia
- Rafik Bouaziz, University of Sfax, Tunisia
- Said Brahimi, University of Guelma, Algeria
- Said Ghoul, Philadelphia University, Jordan
- Salim Chikhi, University of Constantine2, Algeria
- Slim Kallel, University of Sfax, Tunisia
- Souham Meshoul, Princess Nourah Bint Abdulrahman University, KSA
- Walid Gaaloul, Institut Polytechnique de Paris, France
- Walid Mahdi, University of Sfax, Tunisia
- Yamine Ait Ameer, IRIT/ENSEEIH Toulouse, France
- Zakaria Benzadri, University of Constantine2, Algeria
- Zizette Boufaida, University of Constantine2, Algeria

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- Nesrine Khabou, University of Sfax, Tunisia
- Zakaria Benzadri, University of Constantine2, Algeria
- Zakaria Lakhdara, University of Constantine2, Algeria

## Accepted papers

### **Temporal Constraints in Smart Contract-Based Process Execution: A Case Study of Organ Transfer by Healthcare Delivery Drone**

*Amal Abid, Saoussen Cheikhrouhou, Slim Kallel, and Mohamed Jmaiel*

### **A persuasive system to improve physical activities of older adults**

*Housseem Aloulou, Hamdi Aloulou, Bessam Abdulrazak, and Ahmed Hadj Kacem*

### **A Meta-Modeling Approach to Describe Internet of Things Architectures**

*Abdessamad Saidi, Mohamed Hadj Kacem, Imen Tounsi, and Ahmed Hadj Kacem*

### **Business process implementation through SaaS services composition**

*Mouna Rekik, Manel Fourati, and Khouloud Boukadi*

### **Multi-Level SLA Specification Language for IoT Applications**

*Noureddine Staifia and Meriem Belguidoum*

### **Testing Timed Systems Using Determinization Techniques for One-Clock Timed Automata**

*Moez Krichen*

### **Parsing Arabic using deep learning technology**

*Rahma Maalej, Nabil Khoufi, and Chafik Aloulou*

### **A deployment approach for Smart Building applications**

*Imen Abdennadher, Ismael Bouassida Rodriguez, and Olfa Awled Al Hadj Abdallah*

### **Towards a metamodeling approach For IoT based System of Systems**

*Sahar Smaali and Rachida Boucebsi*

### **Social media influence analysis Techniques Systematic Literature Review**

*Yosr Sahnoun, Mariam Chaabane, and Ismael Bouassida Rodriguez*

### **Data-based Guiding Framework for Digital Transformation**

*Zakaria Maamar, Saoussen Cheikhrouhou, and Said Elnaffar*

### **TUNisia-Italy Cross-Border Environment Net platform for emergency response (NETTUNIT): project presentation and early results**

*Mohamed Hedi Fourati, Saoussen Cheikhrouhou, Slim Kallel, and Mohamed Jmaiel*

### **A deep learning-based approach for segmenting and counting reproductive organs from digitized herbarium specimen images using refined Mask Scoring R-CNN**

*Abdelaziz Triki, Bassem Bouaziz, Jitendra Gaikwad, and Walid Mahdi*

### **From CA-BRS to BPMN: Formal Approach for Modeling Adaptive Security in Cyber-Physical Systems**

*Ayoub Bouheroum, Djamel Benmerzoug, Sofiane Mounine Hemam, and Faiza Belala*

**A comprehensive architecture for an IoRT-aware Business Process outsourcing into Fog and Cloud computing**

*Najla Fattouch, Imen Ben Lahmar, and Khouloud Boukadi*

**Improvement of Differential Evolution with Multipopulation-based Ensemble of Mutation Strategies**

*Besma Hezili and Hichem Talbi*

**Automatic evaluation of existing plagiarism detection tools**

*Siwar Nadhri, Maryam Elamine, and Lamia Hadrich Belguith*

**Towards a Blockchain-based approach to fight drugs counterfeit**

*Rawya Mars, Jiddou Youssouf, Saoussen Cheikhrouhou, and Mariem Turki*