

RTIS'2020 Conference

Workshop CI²DM: Computational Intelligence in IoT Data Management

Workshop scope

Internet of Things (IoT) is a paradigm that connects multiple and diverse smart objects via Internet. Nowadays, this paradigm is receiving a momentous interest in a number of real-life fields including industry, transport, healthcare and smart cities. This interest will be more and more growing in the future due to the unprecedented number of objects/devices that will be connected in the world. *Cisco* reports that 50 billion objects and devices will be connected to the Internet by 2020. *Automotive news* states that the number of cars connected to the Internet will increase from 23 million in 2013 to 152 million in 2020. It is then expected that interconnected smart objects will become the major data producers and consumers instead of humans and they generate tremendous amounts of data using their sensors every single of second. Such IoT data are inherently *uncertain, erroneous and noisy* on the one hand, and *voluminous, distributed and continuous* on the other hand.

On the other hand, a smart environment is a connected small world where sensor-enabled connected devices work collaboratively to make the lives of persons comfortable, the business of enterprises much big and flourishing, and so on. It is capable of obtaining knowledge and applying it to satisfy more complex users' needs.

Recent research efforts have been conducted to integrate IoT with smart environments. This integration allows extending the capabilities of smart objects by enabling the user to monitor the environment from remote sites. IoT-based smart environments have two main and unique characteristics: the prediction capabilities and the decision-making capabilities. Such environments can collect a variety of data from different sources (i.e., objects/devices) and apply data fusion and mining techniques to leverage and analyse data gathered. Hence, data are then the base for making intelligent decisions and providing new services.

Nowadays, in the context of IoT-based smart environments, data management constitutes a modern and a hot topic and has raised many challenging research tasks. New solutions and revisited existing ones are proposed to address such tasks. The main goal of *CI3DM'2020* is to provide an international forum for researchers from academia and industry to exchange ideas and experiences regarding current and future solutions for managing IoT data. Especially, solutions that leverage techniques borrowed from computational Intelligence field (Soft computing, Fuzzy logic, Uncertainty models, Neural networks, ...).

Works in this field should address business, governmental and societal needs. With a holistic objective, it places humans at the epicentre of the digital transformation to unleash our collective potential, thus taking biological as well as artificial intelligence into account. Humans and institutions should have benefits of explained knowledge from the IoT data in the understandable ways, i.e., linguistically. Next, the promising field is focusing on nature inspired approaches in machine learning and computational intelligence for sustainability reasons, as nature-inspired approaches are not only more natural towards humanity but also more energy-efficient than today's technology, which is the key factor when analysing huge amounts of IoT data. Our emerging, symbiotic technology thus should intend people to support a life in harmony with each other as well as with Nature.

Workshop main topics

We seek original and high-quality submissions related to (but not limited to) one or more of the following topics:

- IoT Data analytics
- IoT Data Fusion / Mining / Integration
- Data quality, data collection and warehousing
- IoT Data cleaning / visualization
- Uncertainty management
- Knowledge discovery
- Linguistic summarization and interpretation
- Optimization based on IoT data
- Energy and time efficient mining knowledge from IoT data
- Trust, Security and privacy
- IoT data integrity and confidentiality
- Predictive and advanced machine learning models
- Real-time and stream processing techniques
- Real-life case studies

Workshop organizers:

- Allel HADJALI (allel.hadjali@ensma.fr), LIAS/ENSMA, Poitiers, France
- Miroslav HUDEC (miroslav.hudec@fon.bg.ac.rs), University of Economics in Bratislava, Bratislava, Slovakia
- Edy PORTMANN (edy.portmann@unifr.ch), University of Fribourg, Fribourg, Switzerland

Expected length of the workshop: *Half of day (form 9am to 1pm).*

Invited speaker:

Name, University, Country (TBA)

Talk: (TBA)

Workshop program committee:

(To be completed)

Christophe Marsala, LIP6, Paris, France

Mustapha Lebbah, LIPN, Paris, France

Gregory Smith, IRISA, Rennes, France

Lagha Mohand, LAS/IASS, Blida University, Algeria

Richard Chbeir, LIUPPA, University of PPA, Pau, France

Guy De Tré, DDCM, Ghent University, Ghent, Belgium

Janusz Kacprzyk, Systems Research Institute - Polish Academy of Sciences, Poland

Witold Pedrycz, University of Alberta, Canada

Miljan Vučetić, VLATACOM Institute of High Technologies, Serbia

Rubén González Crespo, Universidad Internacional de La Rioja, Spain

Martin Štěpnička, University of Ostrava, Czech Republic

Expected numbers of submissions: *up to 12.*

Expected number of accepted papers: *5 -10 papers.*

Description of paper review process and acceptance standards:

All submissions will be reviewed by at least two reviewers who have the required expertise of the scope of the workshop. The review criteria considered are the novelty and originality of the paper, the quality of research methodology, the organization and clarity, the reference to prior work, and the quality of results.

A number of reviewers are identified according to their degree of confidence and expertise in the fields related to the workshop. Then, a simultaneous mailing is sent to all identified reviewers. Each reviewer must select a number of submitted papers according to his research domains and interests. Received submissions will be assigned to the reviewers based on their preferences.

The Program Committee coordinates the reviews and the received reviewers' comments. In case of tie in reviewers' recommendations, one of the committee members will review the paper, to accelerate the decision process.

Finally, notifications about acceptance or rejection of papers are sent to all authors.

Instructions for Submission

The deadline for the paper submission is **April 20, 2020**. However, the potential contributors are requested to send at their earliest convenience an e-mail message, addressed to workshop organizers, confirming the intent to submit a paper and giving its tentative title and a list of the authors.

Submitted papers must comply with the RTIS'2020 submission (<https://rtis2020.sigappfr.org/>). The accepted papers will be published in the main conference proceedings.

Journal Special Issue

Selected papers from the CI2DM Workshop will be invited to submit an extended version to The International Journal of Interactive Multimedia and Artificial Intelligence (IJIMAI) <https://www.ijimai.org/journal/>