

The Second Workshop on
Digital Twins and the Internet of Things

October 12-27 2023
Aveiro Congress Center, Portugal

In conjunction with IEEE WF-IoT 2023



“Opportunities and Challenges for Digital Twins in IoT Deployments”

Organizing and Program Chairs:

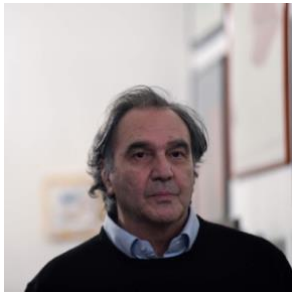
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Description:

Digital Twins (DTs) represent a methodology that is an important aspect of the tools and techniques integral to Digital Transformation and the Internet of Things. The adoption of Digital Twins has already had an impact on a wide range of IoT applications and use cases and is likely to have significant impact in the future. This is evidenced by the activity within industry, professional organizations, associations, and public sector programs devoted to Digital Twins, as well as the inclusion of the subject in technical conferences and events.

There are at least four major high level categories where DTs are likely to have broad adoption, including: manufacturing, products/goods, services, and processes. The foremost aspects of DTs is the use of a digital representation of physical objects/artifacts and of physical/procedural activities. Just as important is the development of digital models that capture the dynamics of the object/artifacts under varying conditions. That in turn implies the instrumentation of the actual objects/artifacts with sensors to create a feedback loop that improves the fidelity of the DTs to predict or express their dynamic state – that is to capture the past, understand the present, and be able to predict the future of the object/artifact. In dealing with complex or compound objects the Digital Twin may in turn be composed of a federation or orchestration of many DTs that must interact with each other, and accurately represent the components or sub-systems of the object.

The value and importance of DTs is to help make decisions, whether autonomously using the DTs to control activities/procedures of physical objects, or to provide the information and analysis that allows end-users and operators to make better decisions, or to improve their experience. The vision within the DT community is that DTs will be able to operate anywhere and have access to a powerful ubiquitous and distributed infrastructure at any time, thus lowering threshold for their common use and deployment. That journey has already started but is far from complete and there are considerable opportunities within the research community to contribute to the underlying science and technology.

Topics of Interest:

The Workshop will explore Digital Twins in the context of the role that they play within the Internet of Things. The emphasis is on solving problems in an organized way and contributing to innovation, new business and organizational models, manufacturing and process efficiency, elimination of risks, better product design, and services that greatly improve the customer experience. The workshop will consist of sessions that address:

- Basic aspects of Digital Twins: why they are important and where are they likely to create value, where they fit within the IoT ecosystem, and what implications do they have for organizational design, new business models, and the role of standards and open source.

- The technological underpinnings of Digital Twins: architectures for Digital Twins, the basic support infrastructure including connectivity, computing, storage, the data sciences, modeling methods and techniques, representation of DTs, the use of AI/ML, Virtual and Augmented Reality, the Metaverse, and Additive Manufacturing among others.
- Shared experiences on the operation of DTs in various settings, emphasizing the factors for success and identifying the challenges faced in deploying and managing DTs in actual use. This includes the technical, organizational, and human aspects of using DTs.
- Use cases and examples of DT: exposing the range of applications and use cases for the Digital Twin concentrating on actual deployments. This includes the four areas cited above and for specific verticals such as industrial manufacturing, personal assistants, healthcare, construction, aerospace, cultural heritage, and smart cities.

Paper Submission:

Important dates:

Paper submission: Jul 30, 2023

Notification of acceptance: Aug 21, 2023

Camera-ready submission: Sep 29, 2023

Presentation submission: Oct 2, 2023



All papers must be submitted through **eWorks**. You must choose the workshop track (**Work-14**) when submitting your paper in order to be considered for this workshop. The paper should be up to six (6) pages in length. The conference allows up to two additional pages for a maximum length of eight (8) pages upon payment of extra page fees once the paper has been accepted.

The paper can be prepared using the template available through the Authors / Proposers tab from the WF-IoT conference website main page at:

<https://wfiot2023.iot.ieee.org>.

An alternative is to use the IEEE Word or Latex tools that can be found through:

<https://conferences.ieeeauthorcenter.ieee.org/write-your-paper/authoring-tools-and-templates/>.

Authors of accepted papers will need to provide a final version of your paper in PDF format and upload it by the camera-ready deadline and complete the assignment of copyright and release form. For your paper to be included in the proceedings and published in IEEE Xplore, at least one author is required to register for WF-IoT 2023 by the deadline.

More information on the workshop:

<https://wfiot2023.iot.ieee.org/2nd-workshop-digital-twins-and-internet-things>