

**Invited Session on “Integration of Unmanned Aerial Vehicles to the Management and Control of Manufacturing Systems”
for IFAC MIM 2022**

Invited session identification code
IFAC MIM 202, June 22-24, 2022, Nantes, France

<https://ifac.papercept.net/>

Session Chairs:

- *Prof. Dr. Dimitris Mourtzis, Laboratory for Manufacturing Systems and Automation, Department of Mechanical Engineering and Aeronautics, University of Patras, GREECE*
- *Prof. Dr. George-Ch. Vosniakos, Director of Manufacturing Technology Laboratory, School of Mechanical Engineering, National Technical University of Athens, GREECE*

New technologies such as Unmanned Aerial Vehicles (UAV) are constantly being introduced under the Industry 4.0 framework. The utilization of UAVs is mainly focused in civil and military applications. However, the research and development for the integration of UAVs in modern manufacturing systems is still in its infancy. Possible application areas include, but are not limited to, real-time remote monitoring, wireless network coverage extension, and remote sensing. Therefore, UAVs can be considered as proactive solvers, simultaneously contributing to enhanced decision making as they are considered to be Internet of Things (IoT) platforms for efficient cost-effective data collection and monitoring. In addition, UAVs may also be exploited in the context of transporting parts and tools of appropriate dimensions within manufacturing systems as viable alternatives to established solutions such as mobile robots etc, especially akin to reconfigurable manufacturing. In that context additional issues pertain to custom design, precise navigation and docking of UAVs. Further to that, the implications of UAVs in confined and crowded Industrial environments (e.g., interference with other systems), must be further researched. Therefore, this Session focuses on gathering research results, techniques, and methodologies for the utilization of UAVs in indoor industrial environments.

Session topics:

The scope of this Invited Session is to collect a series of recent research results with respect to the integration of Unmanned Aerial Vehicles (UAVs) in modern manufacturing systems for improving the management, control, efficiency, productivity, and resilience. Possible submissions include both theoretical and applied architectures and methodologies, explicitly incorporating the nine pillar technologies of Industry 4.0, and in particular: Digital Twins, Artificial Intelligence, Extended Reality, Big Data Analytics. Further to that, the design, development, and implementation of intelligent algorithms for indoor UAV navigation, environment scanning and reconstruction, collision avoidance as well as deployment and sizing of UAV fleets, evaluation of intelligent dispatching strategies in collaboration to battery life optimisation and manufacturing system performance are some of the key topics to be examined.

Submission

For author guidelines, please refer to www.ifac-control.org. All papers must be submitted electronically using <https://ifac.papercept.net/>. All papers must be prepared in a two-column format in accordance with the IFAC manuscript style. Please use the official IFAC instructions and template to prepare your contribution as full-length draft paper and submit it online by **December 25, 2021**. Submission details are available on the symposium website. All submissions must be written in English. All papers that conform to submission guidelines will be peer-reviewed by IPC members. The corresponding author submits the paper online (pdf format) as **an invited session paper**. Submission as an invited paper requires the **invited session code**. Several international journals (IJPR, ANOR, FSM Journal, IJISM) are associated with the MIM 2022 for publication of special issues.

Important dates:

December 25, 2021	Deadline for the submission
February 15, 2022	Notification of acceptance/rejection
March 15, 2022	Deadline for the final submission