

# MED 2022 WORKSHOP

## DESIGN, DEVELOPMENT & TESTING OF UNMANNED VEHICLE SYSTEMS

**Tuesday, June 28, 2022**

**Time: 2:00 PM – 5:30 PM**

**Organizer:** Prof. Vaios Lappas, *National & Kapodistrian University of Athens, Greece*

### Workshop Summary

Systems of unmanned vehicles have shown a great potential to be used in a plethora of applications including monitoring and surveillance, search and rescue missions, terrain mapping, structure inspection, package delivery and agricultural crop inspection. To enable unmanned vehicles to provide those solutions, the research community has dedicated a large amount of effort into developing and investigating algorithms and systems that support the required autonomy level of the regarding application. It is of significant interest to understand the processes and tools that can be used for the implementation and the simulations of the preliminary UAV designs and applications. Utilizing more realistic testing methods, can improve the accuracy of the metrics used to describe the system's performance. The aim of this workshop is to present some of the tools used for the development and testing of a designed system of unmanned agents. Two separate applications and the relevant proposed systems will be introduced; one for target detection, tracking, localization and following by an optical camera equipped UAV, and one for Unmanned Traffic Management (UTM) designed to support UAV traffic demand in urban areas. For each of them there will be an initial system presentation, and an implementation and tools presentation will follow to provide an insight on how a researcher might start testing the desired system. The tools and methods presented include ROS, GAZEBO, YOLO, Deep SORT, BlueSky Open Air Traffic simulator and all of them are open source.

### Schedule

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| 14:00 – 14:30 | <i>Welcome and Overview of the Workshop</i><br>Prof. Vaios Lappas, Department of Aerospace Science & Technology,<br>National & Kapodistrian University of Athens |
| 14:30 – 15:00 | <i>Target detection, tracking and localization with UAVs</i><br>Ioannis Daramouskas, University of Patras  |
| 15:00 – 15:30 | <i>Tools and methods for object detection and tracking and robotic development and simulation</i><br>Dimitrios Meimetis, University of Patras                    |
| 15:30 -16:00  | Coffee Break   |
| 16:00 – 16:30 | <i>Metropolis II: Design and Research of Air Traffic Operations in Highly Dense Urban Airspace</i><br>Niki Patrinooulou, University of Patras                    |
| 16:30 – 17:00 | <i>The BlueSky Open Air Traffic simulator</i><br>Andrei Badea, Delft University of Technology  |
| 17:00 - 17:30 | Panel Discussion and Concluding Remarks  |