



Dear Readers:

Welcome to the Fall 2021 Issue of the ICUAS Association Newsletter. We still face challenges with the (fourth wave of the) pandemic, but these challenges cannot prevent us from moving on and from planning. In this Issue, you will read about **ICUAS 2022** progress, the AIRPHARO successful conference, and about the latest developments and initiatives in the Association. We look forward to your comments and feedback.

ICUAS 2022

Plans for **ICUAS'22** continue. The goal is still that this conference will be a “physical presence” one! Note that this will also be the first conference to include a UAV competition. As of now, the committee has already accepted four Tutorial/Workshop proposals on the

following topics:

- T1 - Integrated Prognostics and Health Management Technologies for UAS Autonomy, Resilience and Safety
- T2 - Towards UAV-Based Airborne Computing: Applications, Design, and Prototype
- T3 - New Developments on Sense-and-Avoid (S&A), Distributed Fault Diagnosis (DFD), Fault-Tolerant Control (FTC) and Fault-Tolerant Cooperative Control (FTCC) Techniques for UAVs and Their Applications
- T4 - Drones as Edge Devices: Challenges, Technologies, and Applications

Details may be found on the conference web, **www.uasconferences.com**. We will continue to update you on a regular basis.

2021 AIRPHARO Workshop Report

Biograd na Moru, a small Croatian town in the heart of the Adriatic coast, was the venue for the **1st AIRPHARO Workshop on Aerial Robotic Systems Physically Interacting with the Environment** (<https://sites.google.com/view/airpharo2021/home>).

This newly established event, a successor of the workshops on Research, Education and Development of Unmanned Aerial Systems (RED-UAS), focused on a high growth area of both



research and industry: the use of aerial robots for physical interaction with people and the environment.

The workshop aimed at novel approaches in aerial manipulator design, including biologically inspired manipulators, new controllers and control architectures for aerial manipulators, autonomy of aerial systems with manipulation capabilities, perception for aerial manipulation and physical interaction, as well as novel applications of aerial manipulators.

The first edition of the AIRPHARO workshop was chaired by professor Stjepan Bogdan (University of Zagreb) and organized by the Faculty of Electrical Engineering and Computing at the University of Zagreb (<https://www.fer.unizg.hr/en>), with technical co-sponsorship from the IEEE Robotics & Automation Society. AIRPHARO2021 was also supported by the IEEE Technical Committee on Aerial Robotics and Unmanned Aerial Vehicles, and EU Horizon2020 project AeRoTwin. The workshop was organized as a hybrid event, but keeping with the topic of the workshop the emphasis was placed on in-person attendance which resulted in one of the first gatherings of the UAV scientific community following the lift of restrictions related to the COVID-19.

The aim of the AIRPHARO workshop was reflected in the two keynote speakers and their talks. The first keynote that kicked-off the workshop was given by professor Anibal Ollero from University of Seville. Profesor Ollero talked about intelligent and bioinspired aerial manipulators, with focus on different operational modes, perception and planning functionalities of said manipulators, extending standard approaches to bioinspired aerial systems. The second keynote talk was given by professor Kimon Valavanis from University of Denver, who talked about the control of unconventional UAVs, namely reconfigurable and hybrid ones. Through the talk, professor Valavanis explored the topics of accurate modelling of such systems via families of admissible models, and control based on such models, all presented through an unconventional fixed-wing UAV and a hybrid aerial-ground unmanned vehicle.



The technical program of the workshop created by the program committee, led by the AIRPHARO program chair, professor Guillermo Heredia from University of Seville, also clearly reflected the stated focus of the workshop. In total, 35 papers were presented through two parallel tracks with a total of six sessions. The proceedings of the workshop are published in IEEE Xplore Digital Library®.

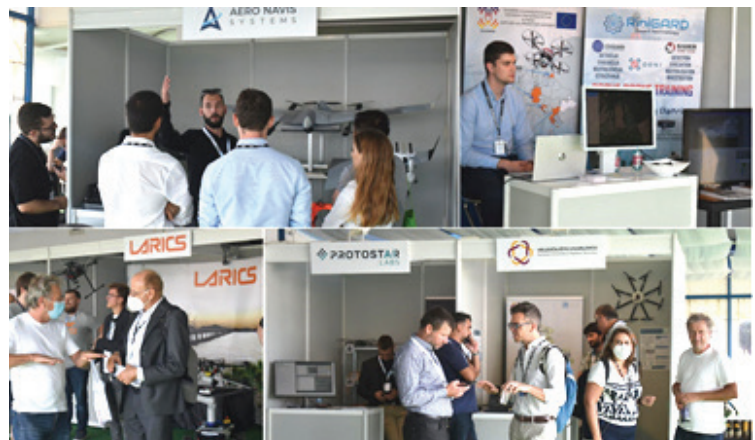


As a testament of the successful organization of the event even under COVID-19 restrictions, 25 of the accepted papers were presented in-person with 35 people attending the workshop. For those attending the conference in-person, a rich social program was prepared, starting with a welcome reception, followed with a happy hour event and concluding with a gala dinner on board a cruise ship.

Keeping with the times and the everpresent strive for commercialization of scientific research, AIRPHARO also included two tutorials on the topics of technology transfer and creation of spin-offs, given by Silvia de los Santos from Technological Corporation of Andalusia (CTA) and Ashutosh Choubey from Imperial College London (ICL).

In parallel with the AIRPHARO workshop, professor Bogdan and his team organized the Drone-Days2021 workshop, focused on unmanned aerial systems applications and end-user industries.

AIRPHARO attendees were granted full access to the exhibition and flight demo areas, providing them with the opportunity to talk to Croatian companies and universities, including the possibility of discussing the regulations on the unmanned aerial systems in EU and Croatia with the representatives of Croatian Air Traffic Control. More information on the DroneDays can be found at <http://dronedays.fer.hr/en/home/>.



AIRPHARO2021 IN NUMBERS:

- 2 keynote lectures • 35 papers, 2 tracks, 6 sessions • 2 tutorials
- 45 registered participants (35 in-person) from 15 countries



Locations of AIRPHARO2021 authors

For the Latest on UAS

In USA

- Visit <https://www.faa.gov/uas/> to read about the **Operations Over People rule** that is now in effect.
- Note that drone pilots who operate under **Part 107** may fly at night (over people and moving vehicles) without a waiver as long as they meet the requirements defined in the rule.
- **Airspace authorizations** are still required for night operations in controlled airspace under 400 feet.
- For information on programs, partners and opportunities visit https://www.faa.gov/uas/programs_partnerships/
- For research and development visit https://www.faa.gov/uas/research_development/

ICUAS Association News

To provide our readers with a dynamic forum for discussion and exchange of ideas, present the latest in unmanned aviation, and to encourage collaboration on projects of common interest, the www.icuas.com web site provides the “External Projects” entry for you to use and take advantage of. You may submit a write up on project results, a link that summarizes your research activities, a video of a successful flight, or any other accomplishment, a link to your lab, etc. Please submit the information to kvalavanis@gmail.com, and this information will be uploaded on the Association’s web.

Send your Report

We solicit reports and briefs for the Winter 2021/22 issue. If you are interested, e-mail your contribution by December 24 to kvalavanis@gmail.com

ICUAS 2022, June 21-24, Dubrovnik, Croatia, www.uasconferences.com

The submission deadline for contributed, invited and poster papers is February 1, 2022.

ICUAS - CONTACT US

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