Ph. D. Thesis / Doctorate

Flight Operations of Multiple RPAS / Drones

Presentation

This PhD thesis aims at redefining the paradigms under which remote pilots and Remotely Piloted Aircraft Systems (RPAS or drones) have been designed and operated during the last decades, this is, with dedicated crew managing single aircraft. However, the advantages of operating of a fleet of drones from a dedicated ground facility involving a specialized team of remote pilots are evident.

The ICARUS research group\(^1\) is currently investigating the requirements for a new generation of drones that support a revolutionary operational paradigm, where each pilot might operate multiple drones in a certain phase of flight; pilots transfer the flight responsibility as the drone operation progresses, improving both the economic efficiency and the safety.

The ground-based flight control of the aircraft fleet is improved by centralizing the drone piloting with a small network of highly capable infrastructure which will guarantee the desired levels of certification, fault-tolerance, and service continuity. Finally, from a safety perspective, the possibility of transferring the control of the drones to a new pilot or to another piloting centre will allow an unprecedented extra safety measure.

Contact

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PhD Planning

The PhD will last for a maximum of 4 years and will have the following planning:

1. State of the art on ground stations for drones and control centers

2. Modeling of the capabilities of existing ground stations and defining requirements for an interoperability design of a supervisor center

3. Development of the supervisor center and of its interfaces
   - situation awareness
   - human-machine interface
   - communication protocols

4. Application and case studies

\(^1\) Find ICARUS web page at [http://icarus.upc.edu/en](http://icarus.upc.edu/en)
Candidate's profile
The candidate should have a Master Degree on Engineering, Science or similar. Preferable profile should demonstrate a strong level in computer science, sufficient proficiency with English language and high academic grades. Additionally, competences in at least one of the following topics would be considered: airspace and aeronautics, data analytics, drone systems and/or geographic systems.

Availability
Expected starting date: January 2018
This PhD Thesis is funded by the MINECO in relation with the FLOR project coordinated by the contact persons.

Requirements
Send an e-mail BEFORE 03-10-2017 with:

- Copy of the DNI/Passport
- Curriculum Vitae
- Qualifications certificate (Spanish/Catalan or English)
  - If qualifications are in another language, add official translation and description of the qualification system of your country

Achievements

- Highest academic degree as PhD
- Work on the latest research topics and technologies
- Reach the necessary capabilities to manage research projects
- Four years of full-time funded internship\(^2\) from MINECO (Spanish Education Ministry)
- Barcelona-Castelldefels working area with possibility of funded stages at other prestigious research centers
- Exploit your new and creative ideas under rigorous research method