International Micro Air Vehicle Conference and Flight Competition 2017

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Proceedings

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Preface

This volume contains the papers presented at IMAV2017: International Micro Air Vehicles Conference and Flight Competition 2017.

The International Micro Air Vehicle Conference and Competition is a yearly event that aims at fostering key technologies for the development of micro-air vehicles. It combines a scientific conference and a flight competition intended to all research groups around the world. After Delft (2014), Aachen (2015) and Beijing (2016), this year edition was held in Toulouse, France, from September 18th to 21nd, 2017.

This edition was, again, an occasion to put forward the methodological and technological advances in this rapidly growing field. The impressive variety of application cases, related needs, and breakthroughs has been represented through the papers gathered in this volume. These papers address many challenges, among which one may mention:

- Conception for new configurations, more efficient, easier to manufacture, bio-inspired,...
- Aerodynamics studies to reduce consumption or to improve drones performances, or to perform finer simulations
- Aeroacoustics studies to reduce the noise produced by drones
- Human machine cooperation, a domain where impressive progress is ongoing, which helps to better understand the human brain, and reduce the operator workload
- Improving the control and guidance designs, in particular to allow multi-vehicles cooperation, better trajectory tracking, and wind gusts rejection, collision avoidance, consumption reduction, or load carrying
- Navigation, the capability to localize the drone in complex environments, with a degraded set of sensors, in particular with the use of few information, for example vision only
- Artificial intelligence, decision making in uncertain contexts, which helps the embedded system taking relevant and safe decision in dynamic environments
- Atmospheric wind measurements

This volume shows great achievements in these various areas. Among those high quality papers, the program committee would like to mention that the paper entitled "Quad-thopter: Tailless Flapping Wing Robot with 4 Pairs of Wings" by Christophe De Wagter, Matej Karasek and Guido de Croon have been nominated for the *Best Paper Award*.

The scientific and organization committees is grateful to the support of our sponsors: Région Occitanie, Toulouse Métropole, Parrot, Mathworks, UIMM, Fondation ISAE-Supaéro and to the contribution of our partners: Toulouse ESOF 2018, Airborne Concept, Mairie de Cugnaux, Préfecture de la Haute-Garonne, DSAC-Sud, Aéroport de Francazal.

September 2017
Toulouse

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