# Editorial IJMAV: Special issue IMAV 2017

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# Edito IJMAV

## special issue IMAV 2017

The International Micro Air Vehicle Conference and Competition (IMAV) 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. The conference part aims at presenting innovations in different areas related to drones : design, fluid mechanics, navigation and control, sensors, data processing, simulation,…. On the other hand, the flight competition showcases novel and/or efficient designs through a set of challenges, while different prizes recognize different possible achievements. After Delft, The Netherlands (IMAV 2014), Aachen, Germany (IMAV 2015) and Beijing, China (IMAV 2016), the 9$^{th}$ edition IMAV 2017 has been held in Toulouse, France, from Sept. 18 to Sept. 21, 2017.

IMAV 2017 has gathered more than 280 participants from 30 different countries including Asia, North, Central and South America, Europe, and Australia. During the two-day flight competition, 30 international teams have taken part to the indoor or the outdoor event. As for the conference, more than 40 papers have been selected for oral presentations from a total number of 60 submitted papers.

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 selected papers gathered in this special issue.

The papers selected in this special issue have been nominated for the “Best Paper Award” which has been given to the paper entitled “Quad-thopter: Tailless Flapping Wing Robot with 4 Pairs of Wings”, by C. De Wagter et al. They went through a double review process before the conference and after the oral presentation. They received the highest scores through this process, and were thus selected to be part of this special issue.

The 2017 edition of the IMAV conference and flight competition was intended to emphasize different aspects of drones. In particular, the conference intended at setting forward novel designs : the papers selected illustrate this aspect with designs dedicated to challenging environments such as the windy urban environment (R. Gigcaz et al., “Exploring Tandem Wing UAS designs for Operation in Turbulent Urban Environments”) or the Martian atmosphere (T. Désert et al., “Numerical and Experimental investigation of Airfoil design for a Martian micro rotorcraft”).

Following the example provided by natural flyers, with flapping-wing configurations or bioinspired aerodynamic sensors have been considered to extend the flight envelope of drones and to enhance their endurance by dynamic soaring (N. Gavrilovic et al., “Bioinspired

wind field estimation-part 1: Angle of attack measurements through surface pressure distribution").

Finally, the issue of acoustic covertness has attracted the interest of the scientific community and is also addressed in the present special issue (N. Gourdain et al., "Application of a Lattice Boltzmann Method to some challenges related to Micro Air Vehicles").

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