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IFAC World Congress 2020 Open Invited Track



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Application of vision information in on-board aircraft systems for civil aviation safety

Nowadays societal challenges include the maintenance of the safety level in air traffic with the ever increasing number of manned flights and the predicted future integration of an enormous amount of unmanned flights into the national airspace. The related challenges consist of the avoidance of mid-air collisions between manned and/or unmanned aircraft and also the coordination of traffic around and on airports during approach, landing and taxiing.

Vision sensors are emerging more and more into everyday aerospace applications and can be a crucial component in answering these challenges as they can provide situational awareness by the detection and classification of aerial and ground objects largely contributing to the obstacle avoidance of aerial vehicles. Another emerging application of vision systems is their use as an additional source of information in runway relative navigation during approach and landing. Vision information can be fused with ILS (Instrument landing system) or GNSS (Global navigation satellite systems) data or applied as a redundant source in fault detection and isolation for ensuring the navigation integrity. This open invited track (preferably as a regular session) thus targets the topics of application of vision information in on-board aircraft systems (both manned/unmanned) for increasing its autonomy level to reduce pilot's workload, and ultimately for contributing to civil aviation safety. The topics include:

- vision system-based sense-and-avoid for aerial/ground obstacles
- vision-integrated navigation for near-ground aircraft operations (take-off, landing and taxiing)
- fault detection and isolation by on-board vision
- any other innovative applications of vision information in the aircraft systems

If your research scope covers these topics, we cordially invite you to submit a paper and grab the opportunity to present and share ongoing research, hot topics and future challenges.

Keywords: Aerospace, Sense and avoid, Landing, Vision systems

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