COLLISION AVOIDANCE

GENERAL

Collision avoidance systems are a key technology for future unmanned aerial systems and advanced air traffic services. Experts at AIT Austrian Institute of Technology have developed an innovative vision-based approach, enabling future unmanned aerial systems to observe and understand their environment in real-time. This approach goes beyond state of the art, making use of novel sensing techniques and route planning strategies for avoidance.

TECHNOLOGY

The technology is capable to detect both cooperative and non-cooperative objects in the airspace by fusion of passive electro-optical and thermal-infrared and active radar sensors. In addition, existing classical technologies such as Automatic Dependent Surveillance - Broadcast and Traffic Advisory System will be used. This robust detection is the basis for the avoidance strategy and maneuver to avoid a potential collision. It focuses on the last possible conflict phase, where both the procedural and separation phase have failed and an immediate maneuver is the last possibility of collision avoidance. As an avoidance strategy, a rules-based approach will be enhanced with geometric considerations on the basis of the degrees of freedom of a generic parameterized aircraft. A particular focus is on the technological impact of the technologies used and the establishment of guidance for a possible regulation.

The technology was integrated in a Diamond Aircraft DA-42 (EASA CS-23 Category) and demonstrated in relevant scenarios.

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH
Christoph Sulzbachner
Tel +43(0) 50550 4177
Giefinggasse 4, 1210 Wien
christoph.sulzbachner@ait.ac.at
www.ait.ac.at/airborne