In-flight tests of intruder detection vision system

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Abstract: In the near future, the integration of manned and unmanned aerial vehicles in the common airspace will proceed. The changes taking place make the safety of light aircraft, ultralight aircraft and Unmanned Air Vehicles (UAV) become an increasing problem. The IDAAS project (Intruder Detection And collision Avoidance System) meets new challenges as it aims to produce technically advanced detection and collision avoidance systems for light and unmanned aerial vehicles. The work discusses selected elements of research and practical tests of the intruder detection vision system, which is the part of IDAAS project. At the outset, current formal requirements related to the necessity of installing anti-collision systems on aircraft are presented. The concept of the IDAAS system and the structure of algorithms related to image processing are discussed. The main part of the work presents the methodology developed for the needs of dedicated flight tests, its implementation and the results obtained. Initial tests of the IDAAS system carried out on an ultralight aircraft generally indicate the possibility of effective detection of intruders in the airspace with the use of vision methods, although they also indicated the existence of conditions in which this detection may prove difficult or even impossible.

Keywords: intruder detection, vision system, airspace, aircraft, in-flight tests