3D VISION AND MODELING
AIRBORNE VISION

GENERAL

Unmanned aerial vehicles are already being used successfully in a wide range of applications and will be increasingly integrated into civilian airspace in the next few years. Future autonomous systems will need to come close to human capabilities when it comes to taking appropriate safety measures, for example to avoid collisions in the air or on the ground during take-off or landing. AIT focuses on measures to safely integrate these autonomous systems into civilian airspace and to ensure appropriate certification. Another core task is to establish official approval procedures for optical systems used in assistance systems including the provision of relevant documentary evidence.

COLLISION AVOIDANCE

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.

ADVANCED NAVIGATION

Robust navigation is crucial for operating any unmanned aerial vehicle. Existing systems are based on global navigation satellite systems, whose functionality can be negatively impacted or even disabled by various influences such as atmospheric disturbances or jamming. Experts at the AIT Austrian Institute of technology have developed an optical on-board navigation system as an alternative or complement to satellite-based systems.

SELECTED APPLICATIONS

The key objective is to increase safety in manned aviation by assisting the pilot and to expand the applications of unmanned systems, e.g. for generating situation maps for crisis and disaster management in the event of fire, floods, avalanches or large events. Important future application scenarios also include the monitoring of critical infrastructure such as power lines, dams or industrial facilities.