Defence-related Research Action - DEFRA

ACRONYM: ATTENTION

Advanced TargeT dEtectioN, recogniTion and Identification based on multispectral inertial Odometry for Navigation

Duration of the project: 01/12/2025 - 01/03/2030

Key words: Autonomous navigation

Budget: € 2.191.000

of which RHID contribution: € 1.999.000

PROJECT DESCRIPTION

Global Navigation Satellite System (GNSS) is a vital technology for Unmanned Airial Vehicles (UAVs), providing accurate positioning and enabling autonomous navigation. However, in hostile environments, GNSS signals can be jammed or unavailable, posing a significant security threat and making reliable operation in GNSS-denied areas a critical challenge. Though equipping UAVs with active sensors such as LiDAR and radar enhances navigational autonomy and perception, they compromise mission stealth and covert operations as their emitted signals can be detected by enemy surveillance systems. Passive sensing on the other hand provides a stealthier alternative, relying on non-emitting sensors to capture environmental data. However, monomodal passive systems face limitations due to their narrow spectral range, which affects their ability to detect, recognize, and identify targets, especially under challenging conditions like smoke, adverse weather, or poor lighting. These systems are also prone to false positives and negatives, reducing their reliability in complex scenarios. ATTENTION seeks to overcome all these limitations by making use of multi-modal sensing and robust sensor fusion, enabling robot navigation in adverse conditions.

CONTACT INFORMATION

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