DEFRA 25: ARIES

Advanced Resolution and Intelligence for Explosive Sensing

Context

Conventional approaches for surface-landmine suffer from strong limitations due to vegetation, soil conditions, camouflage, environmental noise and low discriminative power. To overcome these issues, the ARIES project proposes a context-adaptive and multi-modal sensing framework combining passive visual and geophysical sensors such as hyperspectral imaging, thermal infrared, polarization imaging and magnetometry.

Objective

The main objective is to develop a lightweight (<5 kg), adaptable and mobile surface-mine detection system that achieves high detection performance while minimizing false alarms. The system aims to improve demining safety and efficiency through remote deployment on UAVs, UGVs or soldier-carried platforms.

Methodology

A dataset will be gathered across different environments, operational conditions, and weather scenarios to prototype the sensor fusion and mine detection algorithm.
Next, the refined model will be refined and optimized for mobile deployment, validated through field trials.
Finally, a complete modular multi-platform sensor rig and an optimized hyperspectral filter will be designed, with a focus on SWaP-C efficiency.

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Promotor/Researcher

To be recruited
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Partners

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