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Acoustic Drone Detection

Identifying and locating drones based on their acoustic fingerprint

Drones can become a security risk in sensitive areas such as airports, critical infrastructure, or military facilities. However, when flying out of sight, they are difficult to detect. The Fraunhofer IDMT in Oldenburg has developed an acoustic sensor solution that detects and locates drones based on their sound patterns, even without visual contact.

When visibility is impaired by terrain, buildings, or weather conditions, traditional drone detection methods reach their limits. Acoustic sensors can complement optical or radio-based technologies, thereby making security systems more robust.

The solution developed by Fraunhofer IDMT is capable of detecting the sound patterns of drones – even in noisy environments, thanks to machine learning algorithms. By analyzing signals from multiple microphones, the system can determine the direction from which the flying object is approaching. A particular advantage of acoustic sensor technology is its low energy consumption. The system detects sound emissions and vibrations in the environment without sending out signals for detection. The technology can be deployed across large areas and operated autonomously. In addition, the system can be configured to detect other acoustic events, such as vehicles, burglaries or gunshots.

We can consult you on various integration options, whether as software or a standalone system solution.

Your benefits:

- Detection of drones even without line of sight
- Data-driven documentation of events
- Acoustic sensors complement optical or radio-based methods
- Energy-efficient and does not send out signals for detection
- Additional acoustic services can be monitored simultaneously by the sensors (vehicles, gunshots)

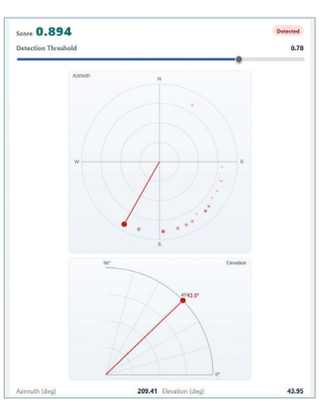
Contact us!

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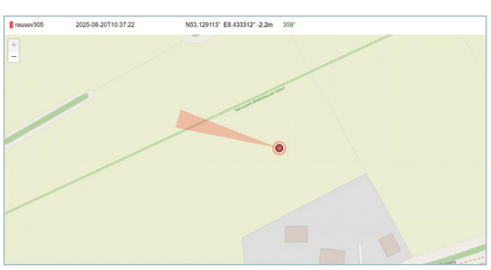
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More information on our website



Screenshots from system demonstrators



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