A bio-mimicry enabled artificial sniffer

Results in Brief

Innovative odour detection technology to secure borders

Dogs and their superior odour detection capabilities are an invaluable asset to border services. An EU initiative is designing artificial sniffer technology to complement and leverage the work done by dogs.

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Detection dogs cannot be easily replaced nor can they operate effectively round the clock. What is more, they are trained in specific odours. Technological advancements that have been introduced to supplement dogs and cover a broader range of security applications have achieved only modest success.

With this in mind, the EU-funded SNIFFER (A bio-mimicry enabled artificial sniffer) project is developing flexible, cost-efficient and portable border security solutions based on advanced biosensors. In this way, dogs can then be relegated to security duties where they can be most effective.

During the first reporting period project partners identified and validated six usage cases that present various security application needs and challenges. They provided definitions, user requirements and specifications for the proposed artificial sniffer devices. The team addressed societal and ethical aspects in the use of such odour

detection devices, and made recommendations for compliance with ethical and human rights standards.

Device functionalities and system design architecture were further specified and defined, leading to an updated list of devices for development. All associated mechanical and electronic subsystems have been built, integrated and trialled.

A particle sampling system that uses a filtration method has been devised and further enhanced. It was tested using particles as drug and explosive substitutes. An initial version of the sensor subsystem has been delivered. Highly sensitive diamond sensor technology was developed and a group of eight sensors was designed.

A range of biosensor technologies and advanced detection equipment are being developed and tested.

In an effort to combine molecules, the SNIFFER team is employing engineering methods to customise proteins. This enables the detection of many types of odours. It is also complementing these biosensor technologies with advanced self-diagnostic features.

SNIFFER continues to address border security challenges mainly arising due to the shortcomings of dogs. State-of-the-art detection of odours from humans, explosives and illegal substances will greatly improve security.

Keywords

Odour detection, borders, dogs, sniffer, bio-mimicry, border security

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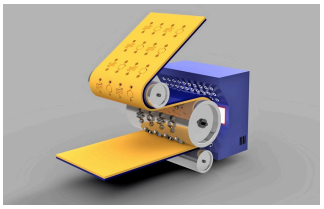

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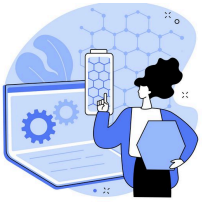

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Project Information

SNIFFER

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Project website

Project closed

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