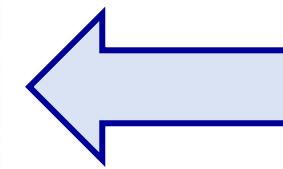
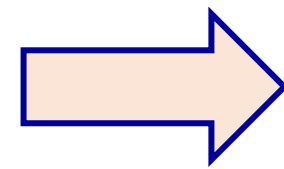
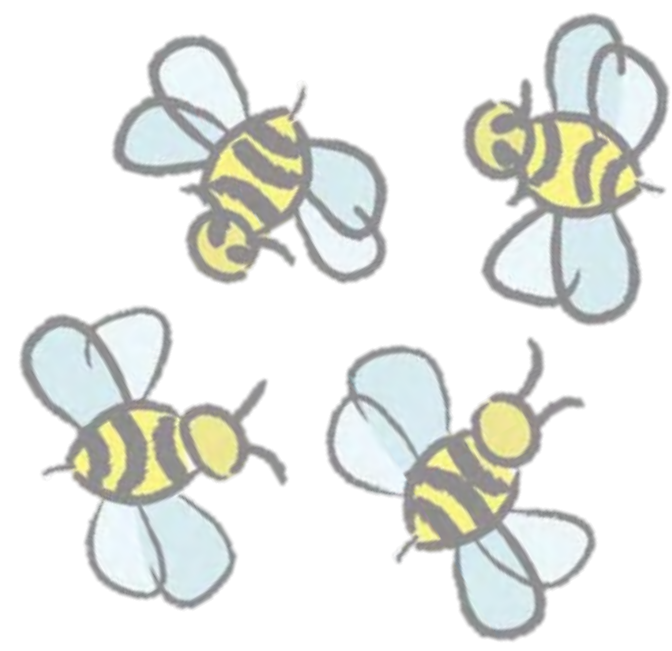
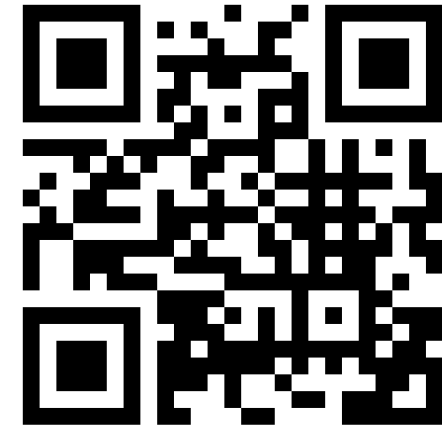


Biological Method (Bees) for Explosive Detection

NATO SPS Project **G5355**, Nov 2017 – Sep 2021

Budget: 394,610 EUR

www.sps-bees4exp.com



PROJECT OBJECTIVES

The major objective is to develop innovative methods and technologies for detection of landmines using trained bee colonies in conjunction with:

- organic semiconductor-based explosive vapor sensing film
- UAVs with high-definition and thermal imaging cameras
- image processing and analysis software

PASSIVE METHOD

Aims to confirm the presence of explosive materials and is anticipated to be useful for area surveying and Quality Assurance post-clearing.

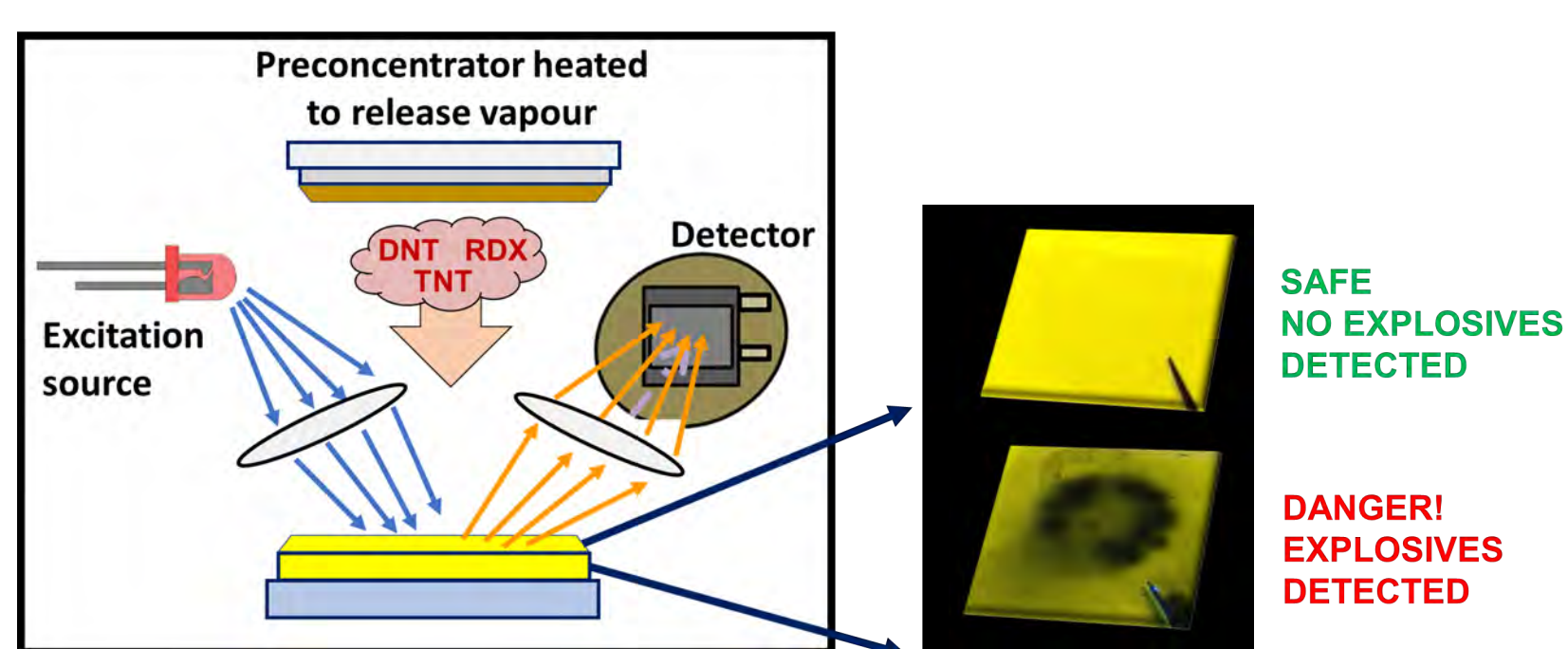
Placement of feeders around the minefield and preconcentrators at the hive entrance



Collection and analysis of samples



Explosives detection using organic semiconductor thin films



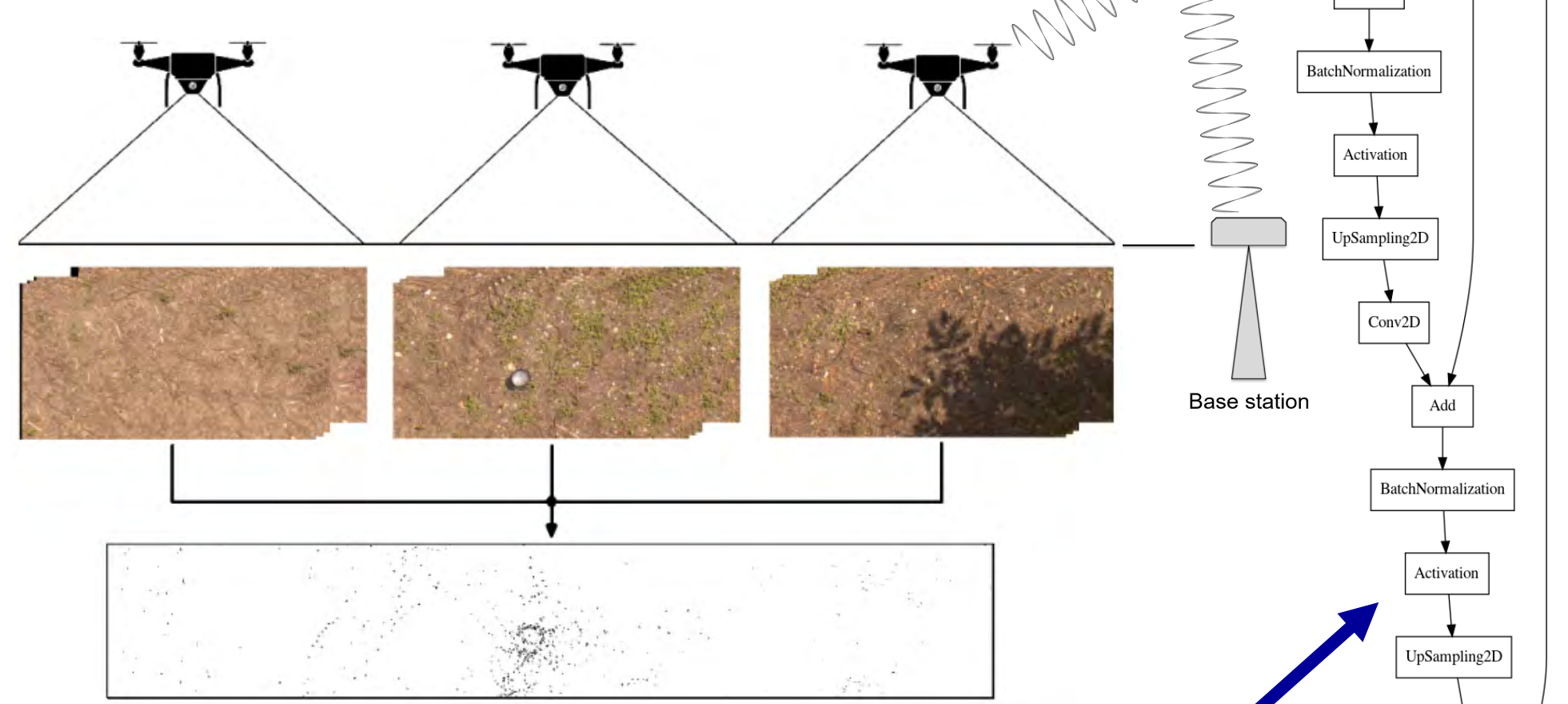
ACTIVE METHOD

Aims to pinpoint individual landmines in an area, with honeybees swarming over a suspected area being captured and automatically detected.

Conditioning honeybees to search for TNT vapour



Imaging conditioned honeybees over landmines and georeferencing using RTK GPS precise localisation



Video processing using convolutional neural networks and detection of suspicious areas

PROJECT PARTNERS



Croatian Mine Action Centre - Centre for Testing, Development and Training Ltd.
Zagreb, Croatia



University of Banja Luka
Faculty of Electrical Engineering
Banja Luka, Bosnia & Herzegovina



University of Zagreb
Faculty of Transport and Traffic Sciences
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