



DRONE TECHNOLOGY AND METHODS FOR DETECTING, LOCATING AND IMAGING BURIED OBJECTS AND FOR SOIL CHARACTERIZATION

TECHNOLOGY OFFER

COMPETITIVE ADVANTAGES

- ✓ **Multiple applications:** archaeology, agriculture, mining and geology, civil works and construction, explosive detection...
- ✓ **Technical and implementation simplicity:** a high investment for development is not required.
- ✓ **Greater speed and exploratory extension:** the use of drones allows exploring large areas quickly, even in difficult terrain.

INNOVATIVE ASPECTS

- ✓ Drones are used to detect buried objects through innovative techniques in the field of signal processing.
- ✓ It can simultaneously characterize the subsurface composition and detect elements buried in it.
- ✓ It gets a clear picture of the subsoil and elements buried in it, thanks to a SAR processing algorithm combined with an algorithm for eliminating clutter and an algorithm for correcting the focus of the radar image due to possible fluctuations of the drone.
- ✓ It emits and/or captures radar signals at different positions in order to obtain 3D subsurface images with cm-level resolution.
- ✓ The method for characterizing the subsurface composition works with any GPR system and is not necessary to recalibrate the method (the processing algorithm is system-independent). It is also a simple and fast implementation method.

PATENTS

- ES patent granted.
- PCT application submitted.

ABSTRACT

Detecting hidden objects using non-invasive techniques is of great interest in many activities. These techniques allow detecting, locating and obtaining an image of the object without interacting with the object itself or its surroundings, this saving time and resources.

TYPE OF COLLABORATION

Licence agreement.

Demo video:

<https://bit.ly/2GXBPwv>

This invention relates to two systems to obtain images of objects of arbitrary composition buried in any type of ground, to a method that uses the system to detect, locate and get images of such objects, and to a method for determining the composition of the soil. The two systems use one or two drones, one for emitting signals and the other one for receiving them. Both systems comprise a portable unit for controlling the flight parameters, processing the radar signals and showing the processed information in real time (images, drone telemetry data, ...).

The invention is applicable, for example, in **detecting dangerous objects such as landmines, in pipeline inspection, archaeology, and in emergency and rescue operations (detection of trapped people).**

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