

FIT-4-NMP Networking and Brokerage Event

organized by FIT-4-NMP H2020 project at the 45th International Semiconductor Conference - CAS 2022

Crop monitoring intelligent system for active disease prevention using IoT areas of microsensors and UAVs

Challenges and objectives

It is the right moment to study (It is a need or an art for art activity)?

- The Agriculture have to change dramatically
 - The second Sustainable Development Goal (SDG 2) from the The 2030 Agenda for Sustainable Development- UN Strategy
 - Explicitly aims at ending hunger, achieving food security and improved nutrition, and promoting sustainable agriculture, simultaneously by 2030.
 - Better protection to the soil-ecological cultures and preserving the biodiversity and ecosystems
 - No pesticide
 - Diminuate the plant illness – higher yields
 - Climate change and intensification of natural hazards
- (The future of food and agriculture · Trends and challenges-FAO Report)

Technical goals

Scope: monitoring of the culture and early identification of plant diseases and infectants/nematodes

Solution:

Using a quadcopter we identify the disease or the nematodes and we identify and isolate the anomalies that appeared in cultures.

We compare with the database from the quadcopter and identify the disease / nematodes.

We transmit the IoT analysis result accordingly to a importance/alert code.

Finally (possibly, if necessary) we activate local intervention mini-robots to treat the disease/eradicate the nematode.

The architecture of the quadcopter had to be adapted for the application (easier to withstand loading with camera and signal analysis devices, with a longer flight time for field application, special protection for working in the greenhouse / against collision with glass walls)

Expected impact

The impact is two folded:

-The products potential market:

Identified customers: agricultural producers regardless of the type of product

Direct competition: As far as we know, there is no complex intelligent prevention system in the EU that can visualize but also detect (sensors) the appearance of plant diseases and announce, in real time, the danger.

-The scientific development and valorization

Scientific papers obtained from microsensors areas technology research.

Design of performant UAVs for application (extended fly time, adaptation for green-house)

Patents for customized solutions.

Technology transfer, manufacturing licenses.

Known partners:

- IMT Bucharest (RDI Institute)
- Autonomos Flight Technologies (SME)
- Genesis Biotech (SME)
- Politehnica University of Bucharest (University)

Needed profiles:

- Plants research RDI institutes
- SME s in IoT and/or AI
- Sensors manufacturing Companies
- Any type of institution interested in topic

Contact details:

Senior researcher, Dr, **Ileana CERNICAN**
Natiua RDI Institute for Microtechnologies,
IMT Bucharest

Email: ileana.cernica@imt.ro

Telephone: +40 723 666 939

Additional information

The title and Acronym are the first attempt (we should make the changes together)

