

Automated flying platform with on-board sensors for supervisory tasks



TYPE OF RESULT

New technology

[New product]

New service

[New knowledge or skill]



COMMERCIAL MATURITY LEVEL

Conceptual idea

[Proof of concept (design)]

Validated in a controlled environment

Validated in a real environment

Successfully implanted



PROTECTION LEVEL

[Non- applicable]

Patent

Software

Know - how

Utility model

Description of the solution. Problem solved



The present technology is a unmanned flying platform control system (drones) owning several different types of sensors (some of them multi -hyperspectral and RGB) that make possible to survey areas autonomously and recursively in order to provide real-time data about a specific surface.

First tests done using this platform have been targeted to survey the crop's health state, more precisely vineyards.

Traditionally, many supervisory tasks have been done manually, which requires several hours or even days, going by foot or vehicle long distances repeatedly. Thanks to the solution presented this situation can be avoided. Thus, when supervisory tasks time are reduced and products can be distributed selectively instead of being globally distributed (for example, a selective distribution of watering and fertiliser) environmental impact is reduced.

Initially, the platform's payload had a hyperspectral sensor in the VNIR range (400-1000nm) and a RGB camera, but it is expected to include another sensor in

range SWIR (900-1700nm) for environmental inspection applications.

Also, the system has an intuitive interface that is able to define optimal flight tracks to survey a specific area automatically.

In addition to this, new features are being developed and they will allow the systems to be replicated in different platforms (drones) that will be able to work on the same tasks jointly (drone fleet), reducing thus the survey times even more.

Fields of commercial application

This system has multiple applications since it is a completely open system to which new sensors can be added (LIDAR, thermal sensors, etc.). Among its possible applications we find the following:

- Primary sector: precision agriculture, geology, etc.;
- Environmental sector: environmental surveys, ecological disaster analysis, fire detection, etc.;
- Energy sector: inspection of solar panel, wind turbines, high-voltage lines, etc.;
- Security and defence sector: rescue services, security and defence systems, mine detection, etc.

Market opportunity

There are similar products on the market, but they are closed solutions aimed at only one specific application and they also are very costly.

In this case, the developed platform and its payload can be modified in order to be adapted to different applications since it is a completely open system. It can even be duplicated as a drone fleet reducing survey times.

Competitive advantage

Being low-cost is its main competitive advantage.

Nowadays, a commercial platform with a hyperspectral camera (for example, a Dji Matrice 600 drone and a hyperspectral camera Specim FX10) costs around 40,000 Euro. Many farmers cannot afford to pay such prices.

Besides, they usually are closed solutions that cannot be modified and customised.

The proposed system would include multi-hyperspectral sensors on a platform that has been developed by our research group. Everything is based on an open and modular solution that can be easily adapted to the application and would cost around 6,000 Euro or less.

AUTHOR
 José Francisco López Feliciano; Pablo Hors-
 trand Andaluz

CONTACT
 Oficina Transferencia de Resultados de
 Investigación (OTRI)
 @ arivero@fpct.ulpgc.es
 ☎ 928 45 99 56 / 43

<https://otri.ulpgc.es/>