

# The 'Aracnóptero' Conquers the Sky



After years of work, investigators at the University of Salamanca and the company Arbórea have developed the 'aracnóptero', a device in the shape of a spider that allows for unpiloted flight; it is equipped with cameras and sensors to obtain various types of data. The platform boasts a system for communications, a control base made up of a very durable tablet type computer, and a remote control similar to that of a video game controller. It's very easy to use and it can be used to supervise military operations or to carry out digital cartography projects, for example.

There are already similar systems on the market, called UAVs (unmanned aerial vehicle) but the 'aracnóptero' has much more advanced specifications due to its vertical landing and take-off capabilities, it can accommodate a load capacity of up to 3 kilograms; it's dismountable and it can be transported in small suitcases. It also allows for extremely stable flights compared to other systems of this type that shake too much to be able to take precise images. Currently, the batteries last about 40 minutes.

The aracnóptero, manufactured with titanium and carbon, is very resistant; it is equipped with a camera that films its own flight and multiple sensors: there's a pressure sensor to control its height, sonar to facilitate automatic landings and take-offs, gyroscopes, a magnetometer, and an accelerometer to gain added stability. Additionally, with the GPS, it can be programmed with automatic flights to be executed and the information can be visualized on the user's interface.

Additionally, the communication protocols used to pilot the aracnóptero are digital, with a theoretical range of 100 kilometers in optimal conditions. "With digital radio waves, we have all the information in real time on the tablet, where we can see the video and the position of the aircraft on the map" says Carlos Bernabéu, founder of Arbórea, which is situated in the University of Salamanca's Science Park.

The investigators are working on an artificial intelligence system with the goal of imitating the communication model of social species such as birds or swarms of bees to establish intelligent flight patterns with groups of the UAVs. For example, "if we're looking for radioactivity, we unfold various UAVs and they communicate with each other through this digital protocol, each one knowing where the other is and acting in order to cover the area without overlap. If one detects radioactivity, the rest go that way make an opportune assessment", Benabéu explains. This multi-agent system imitates gregarious animal models since the logic would be the same."

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