



UNIVERSITY OF JAÉN

Vice-chancellorship of Communication and Institutional Relations

The Office of Communication *Press Release*

Wednesday, May 25th 2011

Researchers at the University of Jaén apply wireless sensor to analyze the environmental quality in real time

It can be applied to the measurement of acoustic noise and for early detection of pests in olive groves, among other uses

Researchers at the University of Jaén, led by Professor Joachim Cañada Bago, use wireless sensor networks that are capable of capturing environmental variables such as temperature, light, humidity, sound pressure, air quality (CO₂), etc., which can measure in real time simultaneously in large areas, in order to apply it to the analysis of environmental quality.

Researchers have developed and introduced within the wireless sensors, consisting of small devices about 8 inches, a system based on artificial intelligence so they can make decisions for themselves, being "like a complete but very small computers," explains Glen Bago. These systems are protected with an insulated box and can run on photovoltaic power. They have a simple operation, since the signal is emitted from one sensor to another until it communicates with a central point that sends information to a computer, and can be consulted from the Internet. They are inexpensive and can reach 30 to 40 meters of transmission, which means a large amount of them can be mounted.

Currently, researchers from the University of Jaén are working on two applications. First on the measurement of acoustic noise in an area, similar to what is done with a sound meter, but with the advantage that this measurement can be performed for 24 hours a day and in several places at once, and not just in a given place and time. Second, in the early detection of pests of olives, since "we measure the environmental conditions close to the areas to be controlled, and when it detects the conditions for the emergence of a type of pest, it alerts to be evaluated the advisability of treatment," says the researcher.

This research group is backed by a research project of the Ministry of Science and Innovation, which aims at the integration of expert systems within nodes of the wireless sensors to measure the acoustic noise, and the decision of whether or not it is high, and if so, generating an alarm. This research is useful, since the new European regulations require municipalities to measure noise pollution. "This system will help municipalities



UNIVERSITY OF JAÉN

Vice-chancellorship of Communication and Institutional Relations

The Office of Communication *Press Release*

wishing to take measures of noise pollution in large areas. This network of sensors will be more versatile and economical than using a set of sound level meters and eventually may be a spatial and temporal evolution of noise," says Joaquin Cañada.

The results have been published in prestigious journals, with very good results and have been awarded new projects to increase this system's performance.