

Mexicans create bracelet for geriatric surveillance

October 22 2013



Researchers have lead a project to build the first medical surveillance bracelet for senior citizens.

More than 40 physicists, medical doctors and engineers from six different academic institutions and one private company participate in this [project](#) that counts with funding by the National Council of Science and Technology (Conacyt), additional to the investment by Matersys Group. Beginning with their fourth year of work, the group already counts with three successful prototypes.

Physicists at the ICN currently work in the generation of [mathematical algorithms](#) that will improve the analysis of signals send by the [bracelet](#)

so "false positives" or confusing data about the health of the patient can be eliminated.

The bracelet is a vital signs monitoring device, this means that is an equipment capable of measuring and sending – long distance- information about heart rhythm, temperature, physical activity, localization, patient's displacements and even falls.

The technology includes different sensors, a data processor, a storage system and equipment to transmit information with smartphone technology. The data can be reviewed by the physician during consults but, additionally, the data can also be quickly sent to the physician's cellphone in case of severe heart arrhythmias or if the patient falls.

Benjamín Morales, from the ICM-UNAM, is head of the project since December of 2012; he explains that the original idea was conceived by Matersys Group and that the first device was built by researchers from the Polytechnic University of Aguascalientes, the State University of the Valley of Ecatepec and physicians from the Institute of Social Security of Mexico State and Municipalities (ISSEMYM) in Ecatepec (all dependencies located in Central Mexico).

"Until to the second year of the project was the UNAM invited to participate. The first invitation was made to a group of Nuclear Physics, led by Alejandro Frank at the Center of Complexity Sciences (C3), who were interested in the analysis of biological time series; another invitation was extended to the Detector Laboratory, led by Guy Paic, for the development of instruments needed for the project. I was integrated to the team when those two groups invited me to participate in the development of mathematical algorithms used to detect [heart arrhythmias](#)", said Morales, expert in High Energy Physics, who imported his knowledge in techniques of cosmic rays detection to the development of a highly efficient geriatric bracelet.

UNAM has collaborated in some critical parts of the development of the bracelet like the elaboration of high precision electronic instruments and the definition of processes for signal interpretation. Specialists from three different National Health Institutes (Cardiology, geriatrics and oncology) also collaborate in this effort, besides the already mentioned institutions.

The Mexican device monitors with infrared light the radial pulse or blood flow through the wrist of the patient. Although some similar devices already exists, they don't have all the functions of the instrument designed and built in Mexico, and are targeted to athletes not to [senior citizens](#).

Currently, the prototypes built at UNAM are in a size reduction phase to make the instruments portable. During the last three years, the project has received financial support from Conacyt and is now in search of new funding for the last testing phase before delivering the prototype for industrial production and commercialization. The current phase of development requires 1.5 million dollars of additional funding.

Provided by Investigacion y Desarrollo

Citation: Mexicans create bracelet for geriatric surveillance (2013, October 22) retrieved 3 May 2024 from <https://phys.org/news/2013-10-mexicans-bracelet-geriatric-surveillance.html>

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