

Researchers develop a small desktop robot for older adults

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Researchers from the Universitat Politècnica de València (UPV), belonging to the Valencian Institute of Artificial Intelligence (VRAIN), have developed a new prototype of a small desktop robot for older adults

that can monitor their physical and mental state and recommend different exercises to contribute to their well-being.

Called GTIbot, the microrobot records all the activities performed by the user and stores them for possible follow-up by the caregiver. It also incorporates a camera with which it can detect and process emotions and a set of sensors that measure everything from humidity and temperature levels to CO₂ and total volatile organic compounds (TVOC). The information these sensors provide allows the robot to inform caregivers if any of these values exceed levels that could risk the person's health.

The microrobot also has a voice recognition system, which significantly facilitates its interaction with the user, making communication very easy for anyone. "The interaction is mainly voice-driven regarding requests and the responses it generates. It also incorporates a small touch screen, which allows the audio responses generated by the assistant to be reinforced," adds Jaime A. Rincón, a researcher at the UPV's VRAIN Institute and one of the developers of GTIbot.

Accessible to all

According to UPV researchers, one of the disadvantages of the assistants available on the market is their high price, making them inaccessible to a large percentage of the population, usually those at risk of exclusion and more vulnerable. However, with the appearance of new, smaller, cheaper, and more powerful devices, it is possible to adapt to a new type of low-cost physical and cognitive assistant that can be accessible to the most significant possible number of people.

"This is the case of GTIbot, whose cost and functionalities make it particularly suitable for the target group, mainly [elderly people](#) who live alone or spend a large part of the day alone," say Vicente Julian and Carlos Carrascosa, also members of the VRAIN Institute and developers

of the prototype.

Monitoring the heart

GTIbot can also communicate with different wearable devices worn by the user, from an exercise wristband to a [heart rate monitor](#). "In this case, being able to record heart signals (ECG), the robot is a great ally for monitoring elderly people with [heart problems](#) and can even analyze the signal and detect atrial fibrillations. Via Bluetooth, the robot can send the analysis results to the caregiver, their doctor, or a health center," adds Cédric Marco Detchart, a member of the VRAIN UPV team.

Regarding other applications, the team from UPV's VRAIN Institute points out that GTIbot could be used to monitor rehabilitation exercises or certain positions in certain types of training, such as Pilates or Yoga.

The work is published in *Intelligent Data Engineering and Automated Learning—IDEAL 2022* and *Bio-inspired Systems and Applications: from Robotics to Ambient Intelligence*.

More information: J. A. Rincon et al, Towards a Low-Cost Companion Robot for Helping Elderly Well-Being, *Intelligent Data Engineering and Automated Learning—IDEAL 2022* (2022). [DOI: 10.1007/978-3-031-21753-1_18](https://doi.org/10.1007/978-3-031-21753-1_18)

J. A. Rincon et al, A Physical Cognitive Assistant for Monitoring Hand Gestures Exercises, *Bio-inspired Systems and Applications: from Robotics to Ambient Intelligence* (2022). [DOI: 10.1007/978-3-031-06527-9_2](https://doi.org/10.1007/978-3-031-06527-9_2)

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