

# Artificial intelligence lenses for the blind created

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Combining computational geometry, artificial intelligence, geo and ultrasound techniques, among others, scientists from the Center for Research and Advanced Studies (CINVESTAV) created a device to help people with low vision or blindness to navigate more easily.

This project, developed in the Department of Electrical Engineering and

Computer Science, began formally in 2009, and in less than five years a prototype was created and is about to be transferred to the technology company Qualtop, said Eduardo José Bayro Corrochano, project leader.

The navigation device consists of glasses with stereo sound sensors, GPS technology and a tablet, which guides the blind person to a specific point and avoids hitting static or moving obstacles, also recognizes money bills of various denominations, and color of clothing.

The expert, who also developed the first inexpensive humanoid robot in Mexico called Mexone, said it was from progress made during his research in robotics that he considered using stereoscopic vision algorithms in a guiding device for people with visual disability.

The idea came from a doctoral thesis at the CINVESTAV on the use of stereoscopic vision lenses designed for people with blindness. To do this, the researchers went to the School for Blind Girls in Guadalajara, which addresses this type of disabilities, in order to meet the needs of the visually impaired.



It was after the financial support of the National Council for Science and Technology (CONACYT) in 2012 and 2013 when they could accelerate the development of the lens, set the hardware, adapt processors and try different types of sensors used in the device.

"We currently have a light weight, ergonomically acceptable prototype since it almost looks like a normal pair of glasses and can work in real time with batteries that last approximately four hours in continuous use. We hope to have a commercial prototype by next August at the latest, and being able to market it in early 2015," Bayro Corrochano said, who is also a member of the Mexican Academy of Sciences.

Researcher at the CINVESTAV estimate that the commercial product would cost between ten and fifteen hundred dollars (\$13,000- \$19,500

Mexican pesos), and consist of the glasses with sensors and a tablet from which a voice would tell directions and/or warnings.



Bayro Corrochano

Although globally there are similar devices, says Bayro Corrochano, the development at Cinvestav combines new algorithms and technology which makes it unique. For example, the use of [ultrasound techniques](#) to detect translucent obstacles, like glass, or the use of [artificial intelligence](#) (machine learning) in order to recognize places, signs and objects. These glasses are also useful for those with poor eyesight, as they help to improve perception.

The project has generated two patents at the Mexican Institute of

Industrial Property, and the developers are looking for investors interested in participating in large-scale production.

Provided by Investigación y Desarrollo

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