NIIRA

Smartglasses System for
Blindness and Low Vision

“What can we improve today?”

The Eyesynth Team

That’s the recurring question we’ve been asking our users for years. During all this time our design team has thought deeply, our engineering team has developed thoroughly and our users have modeled NIIRA: The most advanced sensory perception system for people who are blind or have low vision. A technology that allows us to recognize and explore our environment in the easiest, most intuitive and detailed way to date. Basically, NIIRA records the environment in 3D and in real-time converts all this spatial data into sound. It does not use a voice, but a synthesized sound similar to that of the sea. With it, we can perceive shapes, spaces and obstacles. It may seem like an abstract concept, but when you try it, it is extremely easy to learn. It is feeling space through hearing. We call it Augmented Sense Experience.

We have achieved such advanced technology thanks to our users and testers, whom we ask every day “What can we improve today?”. Some of their responses have been:

“I want to improve my independence”.

NIIRA provides information from the environment in an unprecedented way. It allows us to expand our horizon to incredible levels. Each person adapts it to his or her needs: People with congenital blindness, acquired blindness or visual rest can greatly expand their independence.

“I want to improve my safety”.

Because it is a real-time system, the user is aware at all times of the surrounding environment, and its changes: A person crossing in front of us, a tree branch we are approaching or a bollard with which we will collide. Up to 5 meters in advance. It can be perfectly combined with the cane or guide dog, exponentially increasing levels of awareness and safety.

“I want to improve my awareness of where I am”.

The spaces where we live and move take on a new meaning: suddenly, we perceive details and scenes we never imagined. The world is renewed. Every space, every shape, every object in front of us is shown by NIIRA. With details up to 2mm high. That said, you will have to train to distinguish such subtle sounds; NIIRA provides such a level of detail.

“I want to improve my experiences in unfamiliar places”.

It’s always an adventure to explore new places. Even familiar routes have unforeseen changes: New obstacles, such as roads under construction or badly parked vehicles. NIIRA updates spatial information 60 times per second and shows every change, every nuance. The more we explore, the more sounds we recognize; the richer our interpretation of the environment will become.

NIIRA is a constantly evolving system. Thanks to its WIFI connection, it allows to incorporate new functionalities, which we will be distributing through updates: Integration with IOS and Android, AI with recognition and description of scenes, color, faces, coins and endless functions suggested by the blind community, with whom we work very closely.

AUDIO VERSION

Dr. Francisco Ramos
Lead Ophtalmologist at Hospital General (Castellón - SPAIN)

“This non-invasive technology is the smartest solution for blindness and low vision I’ve seen to date”.

Sergio Fernández
Long-term user

“I was born blind. I never imagined I’d achieve this level of perception. It’s truly amazing. It has changed my life”.

NIIRA

AUDIO VERSION

Sensor Unit

We use several sensors (color, depth, laser) to deliver the most accurate spatial information. Also, the laser system allows NIIRA to operate in total darkness without issues.

Lenses

High quality glass with UV protection. The lenses are interchangeable, so if you have special needs, any eyewear store can shape and fit all kinds of lenses onto the front.

Audio System

In collaboration with the prestigious firm Ortofon™ we have designed an advanced bone conduction audio system; we transmit the sound through the skull, directly to the cochlear nerve. Thanks to this non-invasive system we can keep our ears free to listen to other sounds while enjoying the NIIRA system. In addition, it does not interfere with hearing aids, so comfort and ease of use are maximized.

Image Processing Unit

This is where the magic happens. The 3D data collected by the cameras is processed in real-time, 60 times per second. And it is converted into sound, which is sent to the bone conduction system. The mix of powerful hardware and a complex algorithm produces the most sophisticated and easy-to-use navigation system for the blind. And when it comes to power, it has plenty to accommodate new algorithms and functions. Future-proofed with Artificial Intelligence, Recognition Systems and maximum integration with smartphones.

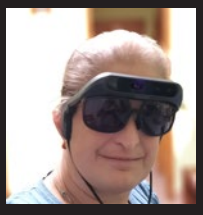
Energy Management

NIIRA has a long energy autonomy; up to 11 hours of continuous operation. In regular use, this allows the users charge the system every two or three days. The USB-C charge port is universal, so you can extend the working time by connecting a standard compatible powerbank.

Dr. Miguel Esteban

Neuro Ophtalmologist, Opht. Service Chief at Hospital Provincial (Castellón - SPAIN)

"NIIRA is a real alternative for blind and low vision patients. The ease of use is key".



Mari Carmen Martínez

Betatester

"With NIIRA, I've dared to explore places I was scared of. The sensation of knowing what's in front of me is phenomenal".

NIIRA

Non-Invasive Image Resynthesis into Audio

eyesynth

Perception Unlimited

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