

Emerging deep tech startup integrates AI into wearables for immersive experiences

Artificial Intelligence (AI)-enabled wearables, including smart glasses, have given Extended Reality (XR) a popularity boost, but their virtual experiences can feel generic and less immersive than expected. Real-time AI demands faster, more accurate optic sensors than what's currently available, and without them, XR fails to address users' intent and immediate personal context, such as thoughts, feelings, and social cues.

VoxelSensors, a Belgium-based deep tech startup, has developed a fast and efficient light-sensing technology that improves digital experiences by seamlessly integrating AI with optic sensors. Its proprietary Single Photon Active Event Sensing (SPAES) technology enables spatial awareness and gaze tracking in XR devices to make devices more intuitive, responsive, and empathic.

"We are revolutionizing wearable AI-based applications and



Voxel Sensors AI-driven smart glasses. (Photo provided by Voxel Sensors)



Johannes Peeters

agents by operating at the boundaries of physics to recognize users' individual focus and intent in real-time," said Johannes Peeters, Founder and CEO of VoxelSensors. "By bringing a new level of empathic abilities to XR and mobile devices, we enable truly immersive experiences that are rich and engaging."

Experienced Optics, Photonics, and Imaging (OPI) team tackles barriers of AI in XR

VoxelSensors was founded in 2020 by a team of OPI industry veterans experienced in scaling complex technologies into products. The team's earlier venture, SoftKinetic, a 3D sensing solution provider, was acquired by Sony in 2015.

With deep industry experience and understanding of the challenges of imaging sensor tech-

nology, such as the size, power requirements, and performance of existing sensors, the VoxelSensors' team created PERCEPT, a software solution that enables empathic immersive experiences built on top of its efficient SPAES technology. The solution enhances wearable and mobile devices by incorporating accurate world data from SPAES sensor inputs and intelligent learning of user metrics to track gaze, eye movements, hands, and head to understand what the user is focused on or intends to do. It enables devices to accurately perceive and understand user attention and intent within their environments.

"These capabilities provide a new level of experience that includes awareness of the user's needs," said Peeters. "A PERCEPT-enhanced AI agent can anticipate those needs even without prompting, distinguish between browsing and genuine interest, understand if they are waiting or searching, identify what draws their attention in a shared image, and more."

VoxelSensors is focused first on the consumer electronics' market, including smart eyewear,



VoxelSensors

AR/MR, and mobile devices, as its solution's low-power and ultra-fast sensing capabilities are well suited for building lightweight-yet feature-rich devices. It plans to expand to other applications in industrial fields, including robotics, drones, industry 5.0, and self-driving vehicles.

Luminate and the Rochester OPI community provide valuable partnerships and support

VoxelSensors is one of ten companies participating in Luminate NY, an accelerator program for startups developing OPI technologies. It's looking to Luminate and the Rochester OPI community to help finetune its technology, prepare for Series-A fundraising, and establish a U.S. presence.

"Luminate is like a well-oiled-machine that elevates and matures each emerging company

by guiding us through all of the steps necessary to build and scale a business," said Peeters. "They have helped us identify and engage with important partners and institutions in Rochester's tech and OPI ecosystem, and their processes and best practices have helped us step up our game."

"Companies like VoxelSensors are pushing the boundaries of what's possible in emerging applications, making them the ideal startup to take advantage of Luminate's support," said Dr. Sujatha Ramanujan, Managing Director of Luminate. "The unique resources and OPI expertise that exist here in the Finger Lakes region are helping VoxelSensors validate their spatial tracking and eye-sensing technology, begin their manufacturing process, and explore applications within the consumer electronics market and beyond."

Luminate is a program that helps startups working on OPI-enabled technologies improve their investability and scale their businesses faster. Companies selected for the program receive an initial investment of \$100,000 to participate in the six-month hybrid program, along with support to improve their path to commercialization. On September 26 at Finals 2024 at The Theatre at Innovation Square, the companies in Cohort 7 will compete for up to \$2 million in follow-on investment. The program is funded by Empire State Development's Finger Lakes Forward Upstate Revitalization Initiative. For more about the program and to register to attend Finals 2024 in person or via live streaming, visit luminate.org.