News and Perspectives

Can South Africans Who Are Blind Trust AI to Guide Them?

Sharon Muzaki, JMIR Correspondent

Abstract

For those who are blind, AI may offer new avenues for navigating the world with greater safety and confidence. In this *News and Perspectives* article, JMIR Correspondent Sharon Muzaki reports on Spectacles4TheBlind SA, a South African navigation support initiative inspired by its creator's grandmother.

Key Takeaways:

- A South African startup is developing AI-powered glasses to help people who are blind navigate using local languages.
- Safety, reliability, and affordability remain unanswered questions as the startup prepares to test its prototype glasses.

When Elihle Amahle Stali, BCom, was growing up in Mdantsane, in South Africa's Eastern Cape, he and other family members took turns guiding his grandmother, who was blind. Whenever she needed to go somewhere, someone would accompany her, holding her hand and describing obstacles along the way.

Stali was 11 when he began wondering whether technology could help his grandmother move independently. In 2013, he promised himself he would develop such a device, but his grandmother died that same year.

More than a decade later, Stali, now 24, is the founder and chief executive of Spectacles4TheBlind SA, a South African startup developing AI-powered smart glasses to help people who are blind or have low vision identify obstacles through spoken instructions in local languages.

The company has developed computer-vision software that detects and tracks people and objects, but the purpose-built glasses have yet to undergo structured testing with users. Its next step is a pilot involving 15 prototype glasses to assess whether the technology can provide reliable guidance in everyday environments.

From a Childhood Promise to AI Technology

Stali began developing the software in 2019, initially building a system that could greet users, ask their names, and recognize objects through a computer camera. At first, it operated mainly in English, but he subsequently reconsidered that choice.

"Why English? My grandmother does not speak English," Stali recalled during an interview.

The company is now developing navigation guidance in 6 languages, including English, isiXhosa, isiZulu, Sesotho, Sepedi, and Afrikaans.

"The software is the engine, the brain that does everything," Stali said, explaining why development initially focused on computer vision rather than wearable hardware.

In October 2026, the company reported progress with wearable-ready hardware, moving-object recognition, and multilingual guidance. It also reported completing more than 100 automated software tests, although these do not establish whether the glasses can safely guide users.

The system communicates detected objects and leaves movement decisions to users, rather than announcing that a path is clear. Whether those warnings are sufficiently comprehensive, accurate, and timely remains to be established through testing.

When AI Makes a Mistake

Navigation technology must interpret surroundings quickly enough for users to respond to hazards. A missed obstacle, incorrect distance, or delayed warning could expose someone to injury.

Stali says demonstrations at a community center near his home with people who are blind helped identify shortcomings in the software. Earlier versions sometimes warned that an object was nearby without identifying it, leaving users uncertain about the danger. He says the team has since improved object descriptions and detection speed.

Ronaldo Nombakuse, MS, an information systems researcher and PhD candidate at the University of Cape Town, understands the motivation behind such innovations. Like Stali, his interest began with his grandmother, who was partially sighted.

"I could see the struggles that she was going through as a partially sighted woman growing up in a rural context," he recalled.

Nombakuse examined the influence of intelligent assistive technologies on daily life in South Africa, where an estimated

1.4 million people have visual impairments. Drawing on 25 semistructured interviews and 37 online survey responses, he found that respondents felt these technologies could improve mobility, communication, access to information, and employability. However, limited employment opportunities and high costs remained significant barriers to accessing them.

He says their effectiveness also depends on the environments in which people live. Damaged pavements, potholes, and inaccessible infrastructure can make independent movement difficult, regardless of the technology available.

“Society disables people who are visually impaired,” he said.

His subsequent research examines these wider barriers through the Social Model of Disability, which considers how social structures and inaccessible environments restrict participation.

A 2025 systematic review in *Sensors* examined 58 studies on navigation technologies for visually impaired people. Although progress has been made, the researchers note continuing accessibility and support challenges.

Stali says the planned pilot will examine safety, comfort, navigation accuracy, language performance, and reliability. Nombakuse, however, questions whether testing 15 prototypes in a limited geographic area would adequately reflect South Africa’s different living conditions.

“Someone who’s in the Eastern Cape in rural areas where they need to go to the river to fetch water, those spectacles might not be useful for them,” he said.

He recommends including participants from rural communities, townships, and urban areas, where pedestrian infrastructure and mobility challenges differ. Crime and the possibility of theft are additional concerns for people wearing visible electronic devices.

Why Local Languages Matter

Nombakuse’s research with Pitso Tsibolane identifies inadequate indigenous-language support in text-to-speech technologies as a barrier to digital inclusion.

During his master’s research, an Afrikaans-speaking woman described struggling with an Android screen reader, prompting others to send voice notes instead.

“And I’m fluent in Xhosa, and I can tell you, it’s going to be a long way for us to get to a space where we can have intelligent assistive devices that speak our native languages,” Nombakuse said.

He recommends working with language specialists to improve pronunciation, including isiXhosa’s distinctive click consonants. In navigation technology, unclear spoken instructions could make it harder for users to respond quickly to hazards.

The Challenge of Access and Affordability

Even if the glasses prove reliable, affordability could limit their reach. “These technologies are useful, but they are expensive,” Nombakuse said.

Stali estimates that a future pair might cost around 8000 South African rand, although the retail price has not been finalized. He hopes hospitals, schools, universities, and disability organizations could purchase devices for people unable to afford them individually.

Stali also faces manufacturing and funding challenges. Specialized components can be challenging to source locally, and he has traveled abroad for potential manufacturing partnerships.

He says prospective investors have expressed interest, although some requested equity stakes he considered too large. Government representatives have also shown interest, but securing practical assistance has proved difficult.

Nonetheless, he is determined. “With or without government assistance itself, it doesn’t pull me back,” Stali said.

Can Smart Glasses Deliver Independent Mobility?

Beyond affordability and technical performance, Nombakuse emphasizes involving people who are blind from the beginning of technology development. He argues that developers sometimes design devices around assumptions about users’ needs rather than their lived experiences.

“The unfortunate part is that the majority of [people who are blind] are never involved in the initiation phase of the technology itself,” he said.

He recommends collaborating with organizations representing blind people, including the South African National Council for the Blind, to ensure technologies address practical needs. Although he raises concerns about accessibility and testing, he welcomes Stali’s initiative.

“I’m not trying to dismiss what he’s doing. What he’s doing is...very innovative,” he said.

> *If my grandmother was going to be alive today, she was going to be the first person to wear the glasses.*
>
> Elihle Amahle Stali, BCom

Whether the Spectacles4TheBlind SA technology can deliver on its promise will depend on the forthcoming pilot and subsequent evaluation.

For Stali, the project remains connected to the grandmother who inspired it.

"If my grandmother was going to be alive today, she was going to be the first person to wear the glasses," he said.

Keywords: blindness; visual impairment; assistive technology; wearable electronic devices; orientation and mobility; accident prevention; accessibility; South Africa

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