Louie：An Augmented Reality Sensory Trigger Wayfinding System for People with Autism

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Technology description

The Need

Millions of people on the Autism spectrum face challenges getting from place to place due to sensory sensitivities to sounds, sights, smells, tastes, physical feelings, and crowds. Due to these triggers, people with Autism have a strong need to know where they are going and what will be there so they can be as prepared as possible for any sensory obstacles they may encounter.
Current wayfinding apps are not specific enough for users with Autistic needs and do not point out triggers or to avoid triggers. While common wayfinding apps are useful for much of the population, those with special concerns need tailored tools beyond what currently exist.

The Technology

The 'Louie' method for wayfinding offers opportunities for integration with maps, area/building representations, and floor plans with known triggers built-in to help users on the Autism Spectrum prepare for their journey remotely before their trip and avoid troublesome triggers in real-time. For instance, a large hospital employing 'Louie' software would offer an augmented reality journey through the halls and help patients be on notice of potential triggers before they arrive. On a bus, the software would tell a user when to get off, when to expect flashing lights, and warn of loud or obnoxious sounds along the route. For pedestrians, sidewalk sizes, buildings, sounds, and crowd sizes would all be available and users could detour around or be prepared for these triggers.
'Louie' is a customizable, augmented reality navigation system. Upon starting up, the software prompts users to select general sensors that trigger negative responses for them in order to tailor the app for their specific needs. A user may not be especially sensitive to crowds, for example, so they would disable the "crowd" trigger. That same user wants to avoid flickering bright lights and enables "sight" triggers. Along the journey, users acknowledge existing triggers and also populate triggers they discover that do not yet appear in 'Louie'. Crowd sourcing the data allows for faster updates in real-time and improves veracity of the information.
'Louie' is accessed through mobile devices and as plugins for existing map technologies. There is strong potential for use of 'Louie' in new VR technology as well. Bluetooth noise canceling headphones

can integrate with the app to help control auditory over-stimulation. Headphones also allow an opportunity for spoken step-by-step instructions from 'Louie's' digital platform. Wearables such as the Apple Watch can enhance the experience by extending alerts from visual and auditory to physical vibration capabilities.
Near term industry applications include enterprises that seek to improve the experiences of their visitors with Autism including (but not limited to) medical facilities, schools and colleges, shopping centers and districts, residential complexes, public transit systems, museums and theme parks, and cruise ships. Larger scale applications include technology overlays to existing wayfinding applications.
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Application area

Mobility for Special Needs
Enhanced navigation of cities, hospitals, airports, shopping centers, and other public areas

Advantages

Improved accommodation
Better access to locations for those with Autism
Reduction of triggers for users with Autism

Institution

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