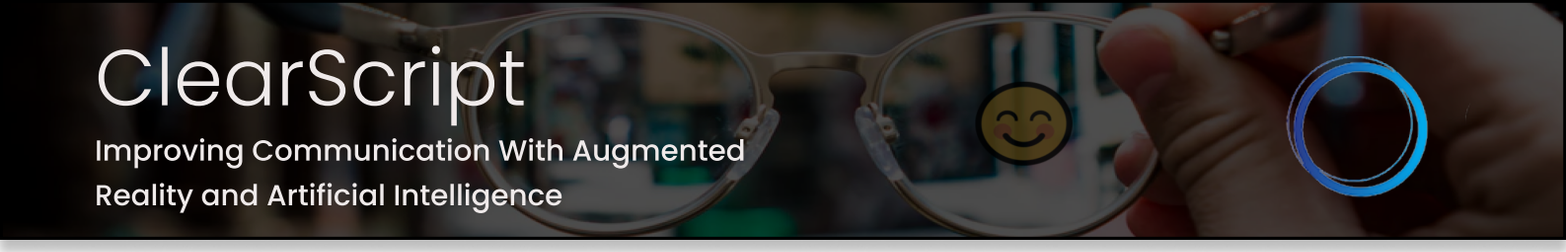

ClearScript

Improving Communication With Augmented Reality and Artificial Intelligence

Emotional Blindness

In the United States alone, over 32 000 000 people have difficulty recognizing others' feelings, either due to Autism (half have social phobia) or a condition called Alexithymia. They know how to respond to different emotions, but not when.

Auditory Impairment

Half a billion people worldwide are auditorily impaired or deaf, often resulting in a lower quality of life. They are twice as likely to suffer anxiety and depression due to the difficultly in learning lip-reading and sign language at older age.

Concept

Augmented reality glasses, with voice and facial expression analysis, will allow users to be aware of emotions conveyed by the other person. Using microphones and online APIs, we will be able to convert speech-to-text and provide live captions for the deaf.

How It Works

Augmented Reality Glasses

Our augmented reality glasses will use a minature camera and a near-eye projector that reflects an image off one lens directly into the user's retina. Dual microphones enable sound triangulation with multiple speakers. With a lithium-polymer battery, the glasses can run for up to 18 hours before needing to charge in its case. Audio and video will be sent via Bluetooth to the user's phone for processing, resulting in 0.4 of seconds before the newest emotion or caption is projected to the user.

Facial & Speech Recognition

Training on the eight most common facial expressions and emotion in voice, two AI models will be able to predict—on a second-by-second basis—the sentiment expressed with a 90-99% accuracy. Without a clear emotion, the model will send the top two possibilities. An accuracy of 90% can be achieved with up to five people in conversation.

Speech-to-Text

Using the SpeechRecognition library, we will be able to convert a few seconds of conversation in real-time from the microphones to text, using the PyAudio package and APIs including Bing Speech, Google API, and IBM's Speech-to-Text. Depending on internet connectivity, an offline engine can be used as well. For deaf users, live captions and the emotion expressed will be projected onto the glasses lens.

Impact

Improved quality of life for individuals with Alexithymia, Autism, and auditorily impaired, will lead to savings of over **$200 000 000 000 USD** in medical and societal costs**,** along with gradual training of emotional recognition.

"This technology could greatly improve the quality of life of people with an ASD by promoting better relationships, which in turn also has an impact on mood, anxiety management, self-esteem, etc."
- Johanne Mainville, Psychologist and Consultant Specialized in Serious Behaviour Disorders

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