Computational Auditory Recognition Ocular Lenses (C.A.R.O.L)

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Assistive technology continues to improve for the hearing impaired with the creation of smaller technology utilizing artificial intelligence (AI) models inside of hearing aids. However, even with advances in hearing aids, the hearing impaired have a hard time hearing in crowded rooms (cafeterias, loud classrooms) because current hearing aids amplify all voices equally, not just the ones closest to the user. Using pupil tracking AI along with speaker diarization AI the user will look at the person they want to hear and that will be the amplified voice played through their hearing aids, in this prototype earbuds. The criteria was to fit eye tracking technology into a pair of wireless glasses, and pair it with speaker diarization earbuds. The prototype, Computational Auditory Recognition Ocular Lens (C.A.R.O.L), contains the smallest working technology possible for a prototype, and nothing outrageously expensive. The glasses contain two ESP 32 Cam boards and a Raspberry Pi Zero 2w, as well as the components required to power them. The frame was 3D modeled and printed to fit the specifications of the electronic components inside. This successful prototype provides an excellent baseline for future advancements in assistive technology: more discrete, more accurate, more efficient. A future pair can integrate better computing, most likely in a custom chip, to take the place of the current laptop, and reduce latency and WiFi usage.

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