Wearable Memory Assistive Device for Dementia and Alzheimer's Patients Using Machine Learning Facial Recognition

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Over 6 million Americans are living with Alzheimer’s, with the number projected to more than double by 2050. The number of people with various dementias is also expected to increase from 55 million to 139 million by 2050. Alzheimer’s and dementia impair declarative memory, leading to difficulty in recalling known faces, depending on severity. However, studies have observed that in early-mid stages of Alzheimer’s and dementia, patients often don’t entirely forget faces and names, but can’t recall them on command, leading to frustration and social withdrawal. Hence, an inconspicuous face recognition assistant may alleviate the social predicament. I propose to build a discreet, open-source, and affordable face recognition device using off-the-shelf components that serves verbal reminders of loved ones’ names using Artificial Intelligence (AI) facial recognition on a Raspberry Pi to increase the social confidence of people with early-mid stages of dementia. Loved ones’ pictures and names will be uploaded to the device with a tiny camera which, when activated by the user, will recognize the face and enunciate the name using a discreet in-ear headphone. The device has a companion app for increased usability for elderly patients and can track the number of times the patient pushes the reminding button over time for tracking memory decline. There is currently a lack of products on the market to solve this issue, and those that exist require opening an app, pointing a phone or tablet camera, and reading text on the screen, an invasive process that patients may be uncomfortable using in social settings or around loved ones. This project aims to be “out of the way” in order to keep the natural flow of conversation and increase social confidence amongst users.

Awards Won:

NC State College of Engineering: Scholarship to attend NC State Engineering Summer Camp