MemAid – A Therapeutic Application for Dementia Patients and Caregivers

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Abstract

MemAid is a mobile application focused on assisting patients with cognitive disabilities and improving the quality of life of their caretakers. MemAid provides a variety of tools to assist patients with memory rehabilitation as well as reminders and safety features for the patient’s well being.

Objective

- Gamify memory rehabilitation
- Alleviate caretaker responsibilities
- Automate patient’s daily activities and mental exercises

System Design

- Send location beacon every N minutes
- Allow queries for patients last location if patient is paired with this caregiver account
- SQLite Embedded Android Database accessed through an Object-Relational Mapping Layer
- Multimedia stimulus storage

Features

Memory game: MemAid has a memory game where patients are shown visual or aural stimuli and they are required to vocalize their answer.

Reminders: MemAid provides noticeable reminders to patients for daily tasks. The caretaker will be notified if a patient fails to acknowledge a reminder that has been given.

Location Tracking: MemAid tackles the problem of wandering in dementia patients by tracking the location of the patient through ‘safezones’.

Screenshots of Key App Pages

Results

Our current testing of our speech recognition algorithm reveals that:

- The algorithm recognizes a wide variety of English words with almost perfect accuracy (98%)
- Foreign names spoken by users with accents have a fair accuracy (73%)

![Performance of recognition algorithm on words of different origin](image)

Conclusions

- After our testing of the speech recognition system we conclude that the application performs with a combined accuracy of 85.5% across Anglican and non-Anglican names.
- It has also received positive feedback from the medical community for future patient application.

![Tracking Patient Location History](image) ![Memory game using speech recognition](image)