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Section P STEM II
May 22, 2018

Adaptive Walker for Clients with Dementia

Engineering Problem

The client has difficulty remembering his walking aid as a result of his dementia, creating a risk to his health.

Engineering Goals

Design an adaptive device to notify the client and staff when the client exits a designated proximity from the walker.

Project Overview

Dementia is a highly prevalent condition with varied symptoms including disorientation, memory deficits, and personality lapses. Patients with dementia are consequently at increased risk of falls or accidental self-harm. The device will provide safety, mobility, and independence to the client by issuing a reminder whenever he moves beyond a fixed range of his walker. This solution could be applied to many patients with dementia or other mental deficits to help them to keep track of their belongings or other adaptive devices.

Design Implementation

Bluetooth-enabled devices will be placed on the walker and the client in the form of a wearable clip-on system. The client will wear the Raspberry Pi with a buzzer for notification, and a bluetooth enabled smart watch will be placed on the walker. The devices will communicate with each other at a fixed rate (~1 s interval). When the client leaves a 5 foot radius of the walker, the Raspberry Pi will vibrate.

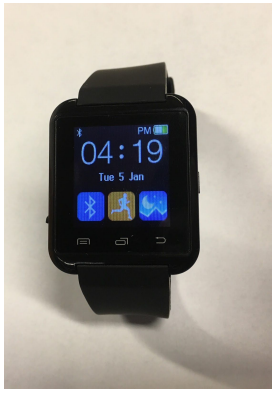

Figure 1: Bluetooth watch.

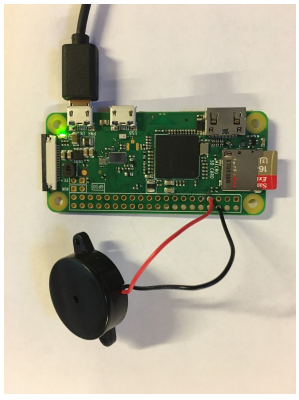

Figure 2: Raspberry pi with buzzer.

Instructables:

https://www.instructables.com/id/Walker-Proximity-Device/