Project Proposal
Smart Walking Cane

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1 Objective

To build a smart walking cane that can work simultaneously as a traditional walking stick, as a smart alert system and a diagnostic tool for doctors. As the next generation of devices are becoming more intelligent, the idea of this project is to embed intelligence into traditional devices. Alot of daily users of walking canes will be reluctant to use smart tags/wearables but many are fond of the traditional walking canes. So the market is still lacking smart walking canes for daily users and specialized biomedical use.

2 Description of Operation

The idea of this project is to incorporate embedded chips into a walking canes and add sensors to it get real time data on walking patterns, also the cane can work as an alert system to help users dodge obstacles infront of them. Two Sonar sensors will be attached infront to help guide the user to avoid obstacles to LED and a small sound sensor to buzz the user. Also, the walking cane will come with a gyroscope and accelerometers, this will help Doctors diagnose and analyse walking patterns by looking at data for longer time periods to help understand if the patients walking patterns is improving or not. The system will come with a network module attached that will talk to a HUB computer over a 2.4 GHz network bandwidth the relay data in real time. Also, the system will come with a SD card module attached to record data for longer time periods.

3 Compliance to Project Requirement

The project 'Smart Cane' was determined to meet all requirements for the hardware, design, parts availability and timeline. The most challenging part of this project would be the implementation and board design. Our team is skilled in different areas of the project from firmware design, to analog, and the post processing of the data in Matlab for visual display of the data. Throughout the project the team wiki site will be updated for each iteration and progress throughout the project. The team already owns an inventory of sensors and network modules from previous projects that can be incorporated into this projects, so the budget for this projects is aimed to be minimal. Block diagram, schematics, programming code, datasheets and other useful matertials will be available in the teams wiki page.