

Project Proposal

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I. INTRODUCTION

We will fit the following sensors into a walker: -An accelerometer that will allow tracking of how much the walker is being used -A GPS that will allow the municipality to have an overview of the position of each user -Pulse sensors on each handle, in order to track the user's heart rate overtime

These sensors will be connected to an Arduino that transmits the data through LoRaWAN to a Raspberry PI that will be the LoRaWAN Gateway.

II. USE CASE

All the people using the walker will be streaming their sensor data to a central server belonging to the Municipality. These data are then used to analyse both the overall use of the walkers, something that interests the manufacturing companies, and the over-time change of the health indicators in order to track long-term progress of the users well-being.

III. USAGE OF INTERNET OF THINGS

How: We will use sensors to gather data and send it to a remote server

Why: Seems like a good way to gather data from a moving object like a walker. Since the end goal is having all the data in a central server owned by the municipality and the infrastructure for LoRaWAN is already considerably developed in Aarhus, we thought that would be a good protocol to use. We considered the possibility of getting sensors with built-in LoRaWAN capabilities, but doing that would restrict our choice of sensors, they would be considerably more expensive, and the work to be done by us would be reduced, meaning a smaller "delta" in our project.

IV. QUESTIONS WE SEEK TO ANSWER

Can we help make better walkers by analysing how and where they are used? Is it possible to have a practical walker that measures some health parameters of its user? Can we track the health progress of a user by analysing the measured health parameters? We will probably not get to this point because our project intends to be the foundation for a larger scheme with the next steps including the analysis of collected data.

V. THE ENVISIONED ARCHITECTURE

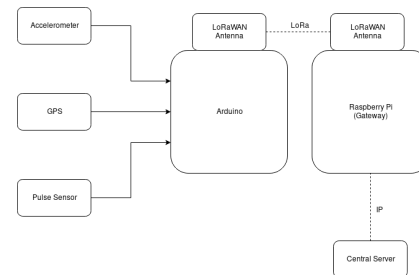


Fig. 1. Schematic representation of the Architecture

VI. WEEKLY MILESTONES

- 1- Have the Raspberry Pi(Gateway) communicating with server
- 2- Have Arduino communicating with Raspberry Pi using LoRaWAN
- 3- Connect Accelerometer to Arduino and get its data on Server
- 4- Repeat step 4 for GPS and pulse sensor
- 5- Fit Components on the walker and preliminary tests
- 6- Test system, collect and plot data
- 7- Write report