Telecommunications project

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Information Technology, Device and Product Design

Introduction

The goal was to apply what I have learned last period, as well as C code with Arduino microcontroller by making this project.

Objectives

The objective was to make a client program which could upload accelerometer data into a database located in OAMK network.

Methods

I made a client program using C code, which was then executed using Arduino UNO microcontroller, accelerometer, 433MHz RF transmitter and receiver .

The client establishes a TCP connection via Apache API with a router within OAMK network. This way the client can access a database where it can upload accelerometer data.

To get the center points of data, I made K-means clustering algorithm using Python programming language.

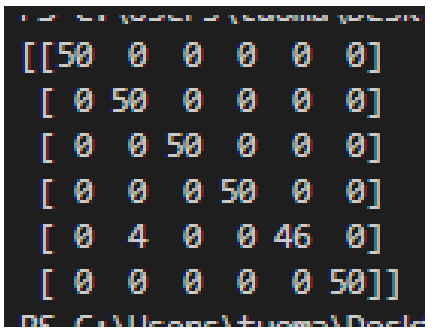
Picture: accelerometer

Results

The project was finished on time with the help of my classmates. I can now send and receive data from the database and get the center points with K-means algorithm. I also managed to make confusion matrix to illustrate the accuracy of my algorithm.

Conclusions

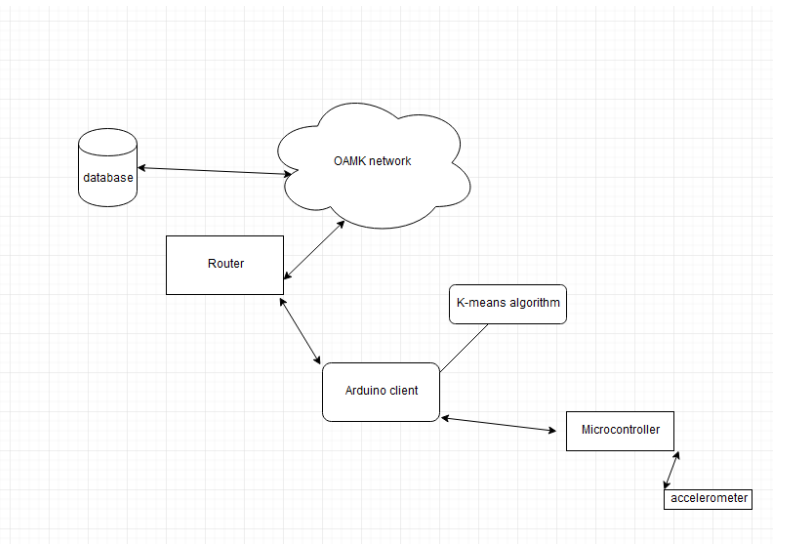
This project shows that I can manage a project mainly on my own. I made sure that I work on the project and that I get weekly tasks done on time. I couldn't be totally independent, because I still needed help from teachers and classmates on some tasks. I am fairly pleased with my performance. I could advance on the project myself, but I wasn't afraid to ask for help when I needed it.



Picture: confusion matrix

References

NumPy for Python:
https://numpy.org/
Pandas for Python:
https://pandas.pydata.org/
Matplotlib for Python:
https://matplotlib.org/
PuTTY:
https://www.putty.org/
Scikit-learn:
https://scikit-learn.org/stable/



Picture: architectural draft

ECTS credits: 15

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