

## Title

Autonomous Person-Following Robot

## Problem Statement

Autonomous robots have the capability of gaining information about the environment. They work without the need for human intervention for a long period of time. They can also adapt to changes in their surrounding environment.

In order to assist elderly or disabled people in supermarkets, our goal is to design and build a robot that is capable of following them, and carry weight for them, to substitute for pushing a shopping cart.

## Outcome

A prototype of a robot that performs the task of following a person through unstructured and rough environment by using different approaches to identify the target (person) to follow, and be able to carry 1 kg of weight.

## Requirements (Tentative)

- The robot should be able to follow a specific person
- It should be able to recognize the person from different directions.
- It should be able to recognize obstacles such as aisles, counters, and people and avoid them.
- The robot should be able to carry at least 1 kg of weight.

## Advisors

- Dr. Muhamed Mudawar (Primary Advisor)
- Dr. Yahya Osais (Secondary Advisor)

## Team

- Member 1: Husam Habarah - 200971590
- Member 2: Adnan Al Sinan - 201015940
- Member 3: Abdulrahman Bataweel - 200927570

## **Autonomous Person-Following Robot**

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Feb 3, 2015

<http://>

**Project manager**

**Project dates**

Jan 25, 2015 - May 18, 2015

**Completion**

0%

**Tasks**

30

**Resources**

5

## Tasks

Name	Begin date	End date	Owner
Project Plan	1/25/15	2/2/15	Husam
Collecting the requirement	2/1/15	2/7/15	Husam
Collect the requirement	2/1/15	2/1/15	Husam
Review with the adviser	2/2/15	2/2/15	Husam
Researching the idea	2/3/15	2/3/15	Adnan
Finalizing the requirements	2/4/15	2/7/15	Abdulrahman
Designing	2/9/15	3/2/15	Abdulrahman
Discuss the different approaches for detecting a person	2/9/15	2/10/15	Husam
Evaluating the different solutions for person detection	2/11/15	2/12/15	Adnan
Architecture design	2/13/15	2/17/15	Abdulrahman
Discuss the design	2/18/15	2/21/15	Husam
Finalize the hardware components	2/22/15	2/25/15	Adnan
Checking that all hardware components work	2/26/15	2/28/15	Abdulrahman
Design Document	3/1/15	3/1/15	Husam
Minimal working prototype	3/1/15	3/2/15	Adnan
Proof of Concept	3/3/15	3/3/15	Husam
Implementation	3/3/15	5/8/15	Adnan
Coding the motor wheel kit	3/3/15	4/23/15	Adnan
Coding the Beaglebone board	3/3/15	4/27/15	Husam
Connecting the motors and the board	3/3/15	4/30/15	Husam
Coding the person detection system	3/3/15	5/3/15	Adnan

## Tasks

3

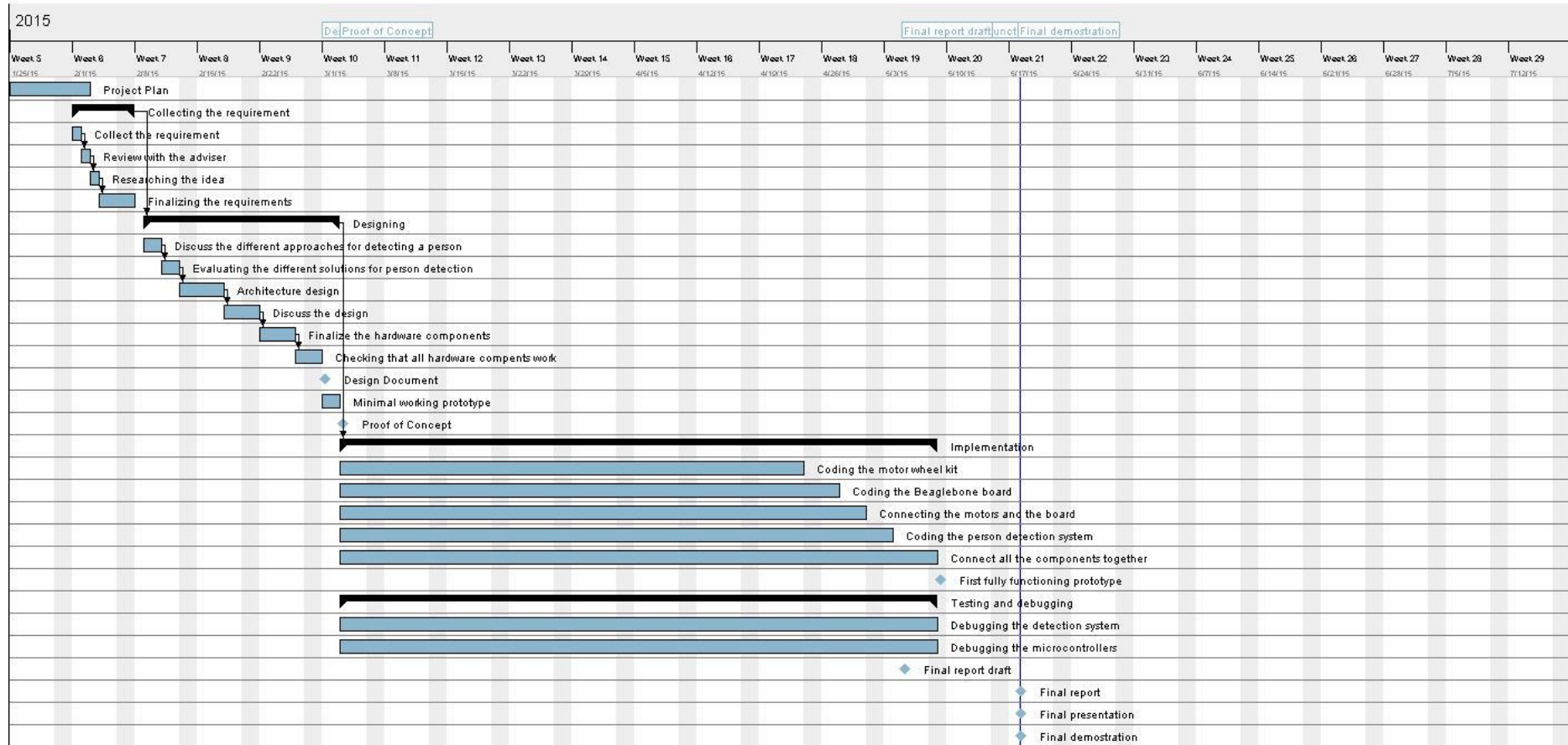
Name	Begin date	End date	Owner
Connect all the components together	3/3/15	5/8/15	Abdulrahman
First fully functioning prototype	5/9/15	5/9/15	Abdulrahman
Testing and debugging	3/3/15	5/8/15	Abdulrahman
Debugging the detection system	3/3/15	5/8/15	Adnan
Debugging the microcontrollers	3/3/15	5/8/15	Adnan
Final report draft	5/5/15	5/5/15	Abdulrahman
Final report	5/18/15	5/18/15	Husam
Final presentation	5/18/15	5/18/15	Adnan
Final demonstration	5/18/15	5/18/15	Abdulrahman

## Resources

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Name	Default role
Husam	Student
Adnan	Student
Abdulrahman	Student
Dr. Yahya Osais	Adviser
Dr. Mohammad Mudawar	Adviser

## Gantt Chart



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Feb 3, 2015



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