## Title of the project

Building an Open Hardware AGV

## Course

PR508G, Bachelor Degree Project in Industrial Engineering, 30 ECTS, full-time course.

## Performed by

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## Company

N/A

## Company supervisor

N/A

## University supervisor

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## Problem description

Increasingly manufacturing companies are seeing the need for greater numbers of AGVs in their factories. However at present industrial AGVs are very expensive devices manufactured by a limited group of companies. The open source movement, beginning in software but moving into hardware, aims to provide open plans for tools and equipment that can then be manufactured by a wider range of companies. This has the advantage that everyone can find out exactly what is in the AGV and how it works, and even improve it as long as the improvements are documents and plans released. This wider community of developers allows robust tools to be developed much more quickly than under a traditional closed source approach.

At present there are no open source AGVs that are capable of being useful in a factory environment. HiS has, in a previous project, begun to develop such a platform and this project will aim to build on that. During the project the student must concern themselves with minimising costs, the practical uses of the device and the limitations of the device with respect to software, hardware and legal issues. It is hoped that a first version of an open source plan of a practical robot can be developed within the project.

## Target

To develop an open source plan for a practical industrial AGV, and ideally build a demonstrator. To achieve this;

1. Understand more about the open hardware movement and what is required to make such a tool work.
2. Minimise the costs of components and reuse existing open hardware projects for example Arduino.
3. Develop and release the plans for the device.

## Approach

The aim of this Project will be creating a customizable, open-hardware, industry-focused, AGV with several configurations and high flexibility, so that it can be used in plenty of environments.

Each one read their own literature and eventually share in common.

Afterwards there will be a phase to develop the conceptual model of the AGV, which will be succeeded by design, material and hardware choice, and implementation of a real model stages.

Miguel Gámez will be in charge of the mechanical part of the project, whereas Miguel Martínez will account for the electrical side. Each will come up with a list of componets suitable for each case, and will finally discuss the best configurations to implement.

## Time plan

The time plan should correspond with the rest of the description, include milestones, and be divided into weeks.

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| **Activity \ Week** | **3** | **5** | **7** | **9** | **11** | **13** | **15** | **17** | **19** | **21** |
| Start | I |  |  |  |  |  |  |  |  |  |
| 1 Literature review and industrial necessities study |  |  |  |  |  |  |  |  |  |  |
| 2 Deciding and developing a conceptual model |  |  |  |  |  |  |  |  |  |  |
| 3 Design of real, feasible frame |  |  |  |  |  |  |  |  |  |  |
| 4 Hardware / peripherial decision |  |  |  |  |  |  |  |  |  |  |
| 5 Different Configuration Setup |  |  |  |  |  |  |  |  |  |  |
| 6 Implementation |  |  |  |  |  |  |  |  |  |  |
| 7 Cost estimation |  |  |  |  |  |  |  |  |  |  |
| 8 Documentation & report |  |  |  |  |  |  |  |  |  |  |
| 9 Preparation of presentation |  |  |  |  |  |  |  |  |  |  |

## Resource plan

Almost certainly will need to work with a physical AGV.

## Secrecy

N/A

Project plan accepted by:

|  |  |
| --- | --- |
| University supervisor  Name:  Signature: | Examiner  Name:  Signature: |
| Company supervisor    Name:  Signature: |  |