Software requirement specification (SRS) document template



Review history



Approval history

Project name: Date: Version:

By: Kevin Tran



Revision history

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Introduction

Describe the purpose of the document.

* 1. Product scope

List the benefits, objectives, and goals of the product.

The main objective of my project is to deliver a prototype of a maze solving robot, which will follow walls, avoid collisions and detect ‘victims’ with a colour sensor beneath it. It will use the components of a Pico Pi with OOP code, servos, ultrasonic sensors, a line following sensor, and a colour sensor. However, if this project is realized as a real product, it will have to have the ability to navigate within a warehouse setting and stock shelves.

* 1. Product value

Describe how the audience will find value in the product.

The value of the finalized robot will come in the automation of repetitive tasks such as stocking a warehouse and ease of programming and use, which will be accounted for when programming the robot.

* 1. Intended audience

Write who the product is intended to serve.

My robot, if it is fully developed, is intended for owners of industrial companies like Amazon, or other businesses that utilize warehouses often. This is because the robot will assist in moving and stocking products without human intervention, potentially speeding up the process and reducing costs.

* 1. Intended use

Describe how will the intended audience use this product.

The prototype is intended to navigate a maze without colliding into walls, but the developed robot is intended for use in an industrial warehouse environment, navigating in the isles to the specified location and delivering the stock it was loaded with.

* 1. General description

Give a summary of the functions the software would perform and the features to be included.

The functions that the prototype would perform would include moving along a wall, avoiding obstacles and potentially detecting colours beneath itself to perform certain actions such as reporting a location.

# Functional requirements



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List the design requirements, graphics requirements, operating system requirements, and constraints of the product.

Design requirements:

* Follow a wall
* Avoid contact with obstacles or walls

Graphics requirements:

* LCD screen

Operating system requirements

* Pico Pi

Constraints

External interface requirements



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* 1. User interface requirements

Describe the logic behind the interactions between

the users and the software (screen layouts, style guides, etc).

The UI elements of the LCD screen and LEDs are there to show the user what state the robot is currently in, for example if it was currently moving, turning or stopping. These are there to add further clarity when making the robot fit the user’s specific needs.

* 1. Hardware interface requirements

List the supported devices the software is intended

to run on, the network requirements, and the communication protocols to be used.

The robot is designed to run on a Pico Pi, with an LCD screen and LEDs as the user interface. The LCD will be using the I2C communication protocol.

* 1. Software interface requirements

Include the connections between your product and other software components, including frontend/backend framework, libraries, etc.

* 1. Communication interface requirements

List any requirements for the communication programs your product will use, like emails or embedded forms.

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# Non-functional requirements



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* 1. Security

Include any privacy and data protection regulations that should be adhered to.

* 1. Capacity

Describe the current and future storage needs of your software.

* 1. Compatibility

List the minimum hardware requirements for your software.

The minimum hardware requirements for the robot would be:

* Pico Pi
* 2 servos
* 2 ultrasonic sensors
  1. Reliability

Calculate what the critical failure time of your product would be under normal usage.

* 1. Scalability

Calculate the highest workloads under which your software will still perform as expected.

* 1. Maintainability

Describe how continuous integration should be used to deploy features and bug fixes quickly.

* 1. Usability

Describe how easy it should be for end-users to use your software.

* 1. Other

List any additional non-functional requirements.

Definitions and acronyms



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