Software Requirements Specification (SRS)

# Project: Self-Driving Car System

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# 1. Introduction

## 1.1 Purpose

This section will detail 1.1 Purpose for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 1.2 Document Conventions

This section will detail 1.2 Document Conventions for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 1.3 Intended Audience and Reading Suggestions

This section will detail 1.3 Intended Audience and Reading Suggestions for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 1.4 Project Scope

This section will detail 1.4 Project Scope for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 1.5 References

This section will detail 1.5 References for the self-driving car project. It includes the design, functional details, and role of this component in the system.

# 2. Overall Description

## 2.1 Product Perspective

This section will detail 2.1 Product Perspective for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 2.2 Product Functions

This section will detail 2.2 Product Functions for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 2.3 User Classes and Characteristics

This section will detail 2.3 User Classes and Characteristics for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 2.4 Operating Environment

This section will detail 2.4 Operating Environment for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 2.5 Design and Implementation Constraints

This section will detail 2.5 Design and Implementation Constraints for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 2.6 User Documentation

This section will detail 2.6 User Documentation for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 2.7 Assumptions and Dependencies

This section will detail 2.7 Assumptions and Dependencies for the self-driving car project. It includes the design, functional details, and role of this component in the system.

# 3. System Features

## 3.1 Traffic Sign Recognition (YOLOv5s)

This section will detail 3.1 Traffic Sign Recognition (YOLOv5s) for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 3.2 Lane Detection

This section will detail 3.2 Lane Detection for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 3.3 Drowsiness Detection

This section will detail 3.3 Drowsiness Detection for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 3.4 Alcohol Detection

This section will detail 3.4 Alcohol Detection for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 3.5 Cruise Control

This section will detail 3.5 Cruise Control for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 3.6 Cloud Connectivity (ThingSpeak)

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# 4. External Interface Requirements

## 4.1 User Interfaces

This section will detail 4.1 User Interfaces for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 4.2 Hardware Interfaces (ESP32, Raspberry Pi, RPiCam Rev 3, L298 Motor Driver)

This section will detail 4.2 Hardware Interfaces (ESP32, Raspberry Pi, RPiCam Rev 3, L298 Motor Driver) for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 4.3 Software Interfaces (Python, OpenCV, ThingSpeak API)

This section will detail 4.3 Software Interfaces (Python, OpenCV, ThingSpeak API) for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 4.4 Communication Interfaces

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# 5. System Architecture

## 5.1 High-Level Architecture Diagram

This section will detail 5.1 High-Level Architecture Diagram for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 5.2 Module Interaction Flow

This section will detail 5.2 Module Interaction Flow for the self-driving car project. It includes the design, functional details, and role of this component in the system.

# 6. Non-functional Requirements

## 6.1 Performance Requirements

This section will detail 6.1 Performance Requirements for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## 6.2 Safety Requirements

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## 6.3 Security Requirements

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## 6.4 Software Quality Attributes

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# 7. Other Requirements

## 7.1 Database Requirements

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## 7.2 Legal and Regulatory Requirements

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## 7.3 Environmental Requirements

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# Appendix

## A. Glossary

This section will detail A. Glossary for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## B. Acronyms

This section will detail B. Acronyms for the self-driving car project. It includes the design, functional details, and role of this component in the system.

## C. References

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## D. Index

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