Collision Avoidance Report

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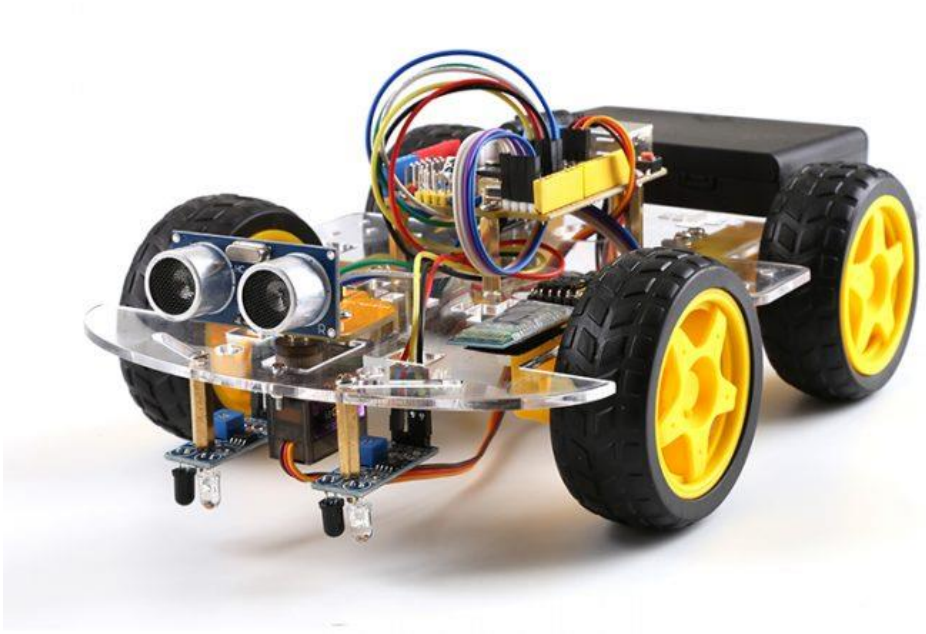


Contents

Introduction

Project Description

The Project is about Collision Avoidance, the car moves when Obstacles are above threshold distance and stops when Obstacles are near the car when Obstacles are below threshold

System Architecting/Design Sequence

System Architecting and design follow this sequence:

1. Case Study and Method
2. Requirements
3. Space Exploration/partitioning
4. System Analysis
5. System Design

Case Study and Method

Software Life Cycle model used

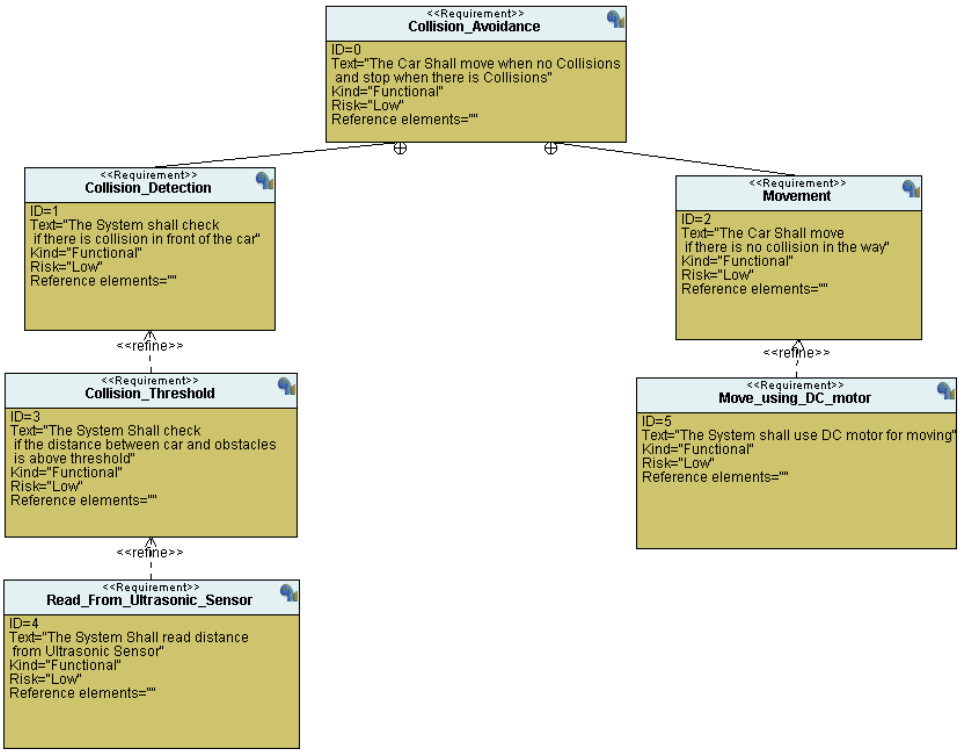
The software life cycle model will be used is V model

Requirements

Customer Requirements

Create a Collision Avoidance System and it should contain all necessary diagrams

Requirement Diagram



Space Exploration/partitioning

Microcontroller

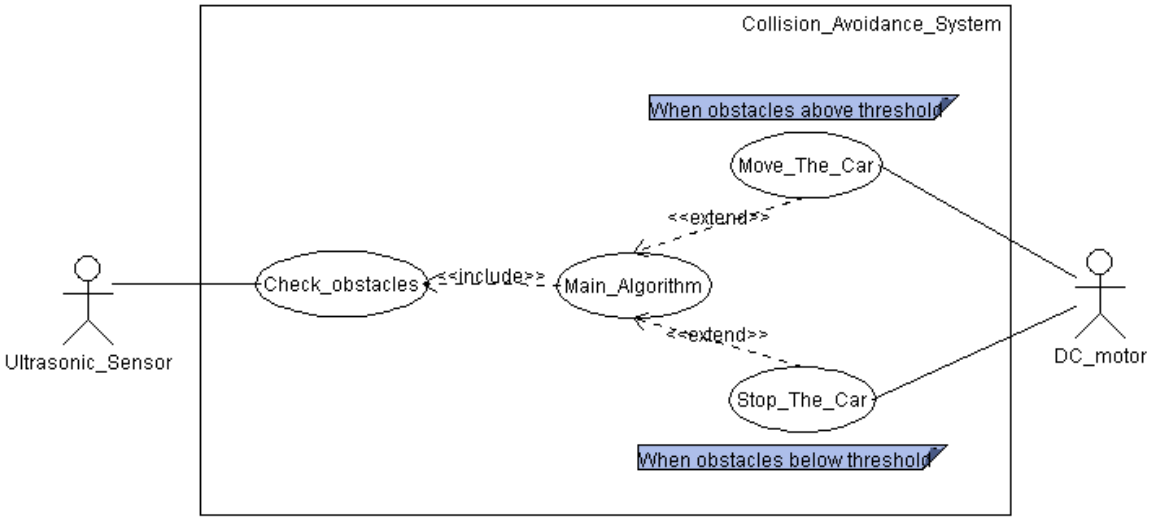
The microcontroller that will be used at this project is stm32

Reason:

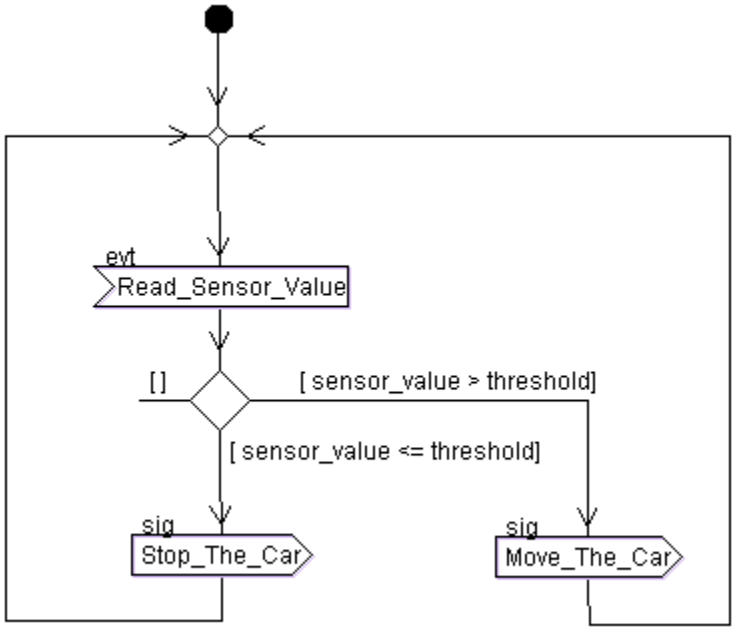
In a collision avoidance project using STM32, the exploration and partitioning of tasks is crucial for ensuring that the system operates efficiently and effectively. This involves breaking down the project into manageable components or modules, each responsible for specific functions. Below is a structured approach to project exploration and partitioning, focusing on the key tasks and subsystems involved.

System Analysis

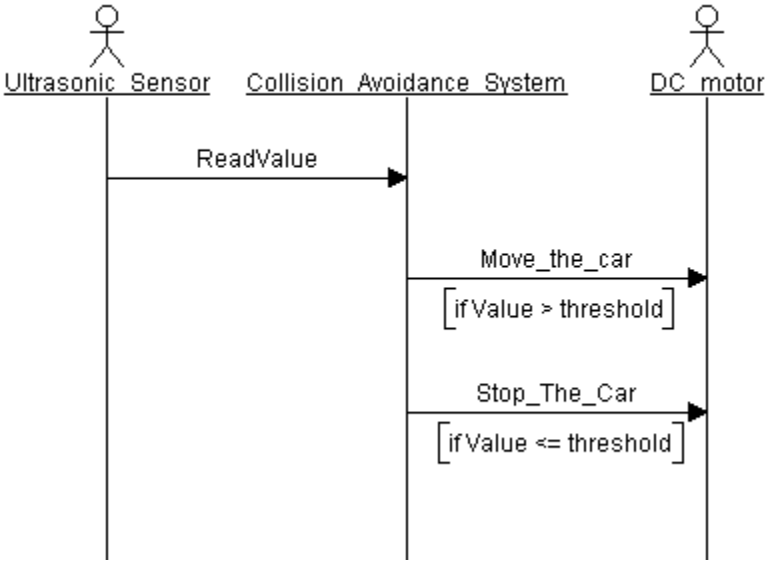
Use case Diagram



Activity Diagram

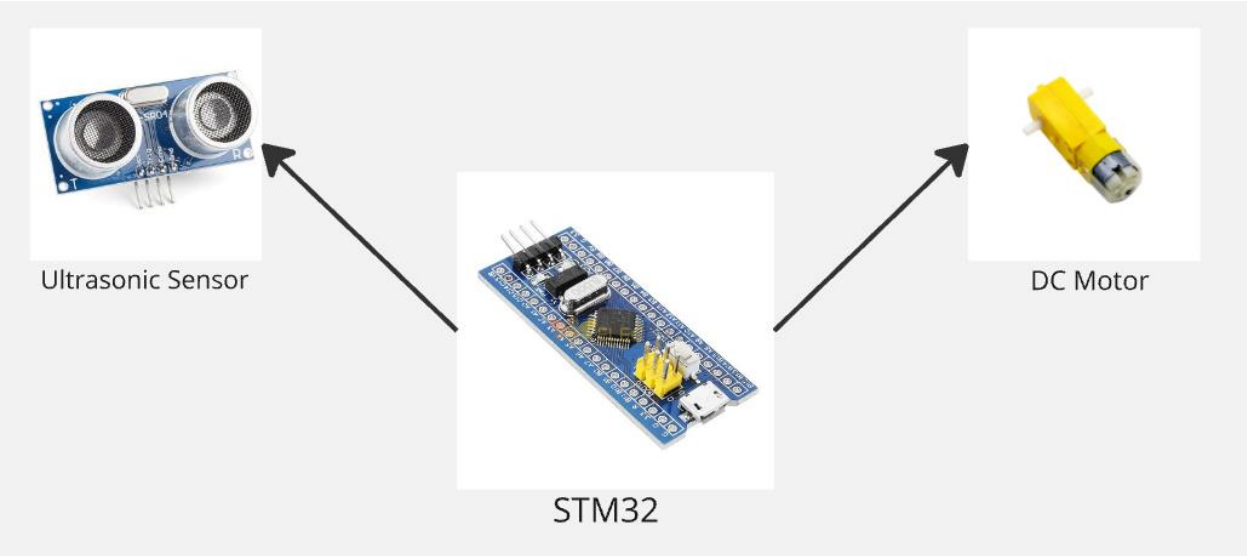


Sequence Diagram

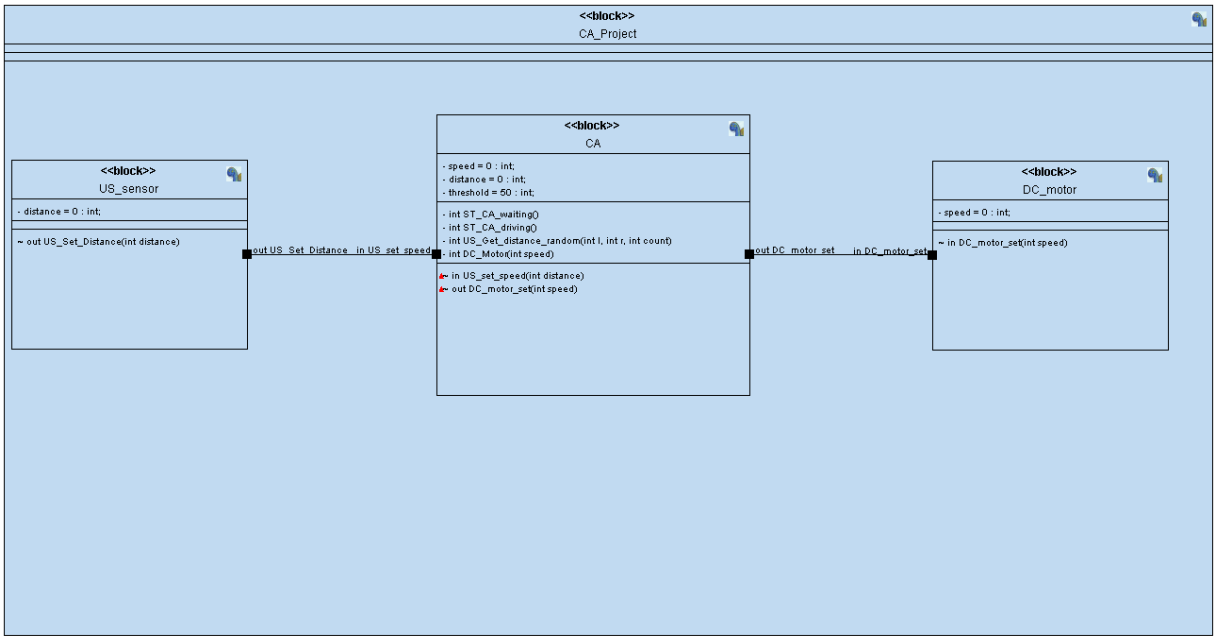


System Design

Hardware Components

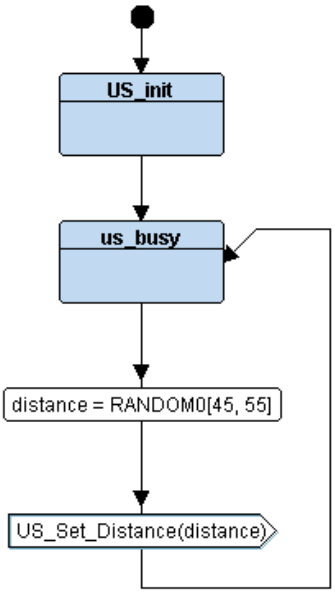


Block Diagram

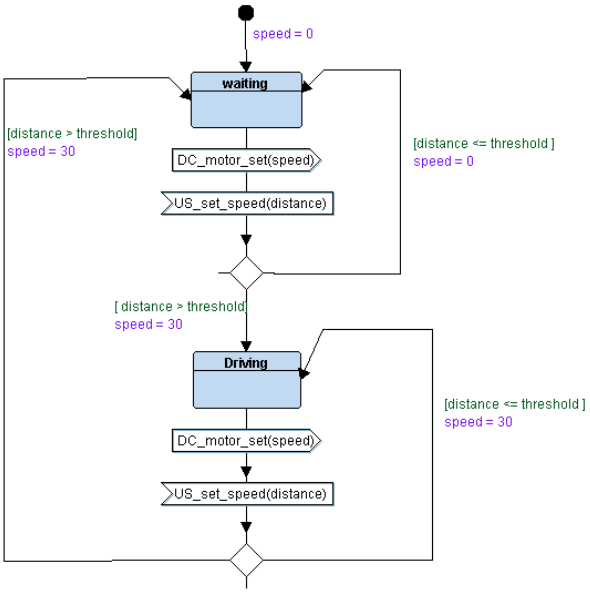


State Machines for Every diagram

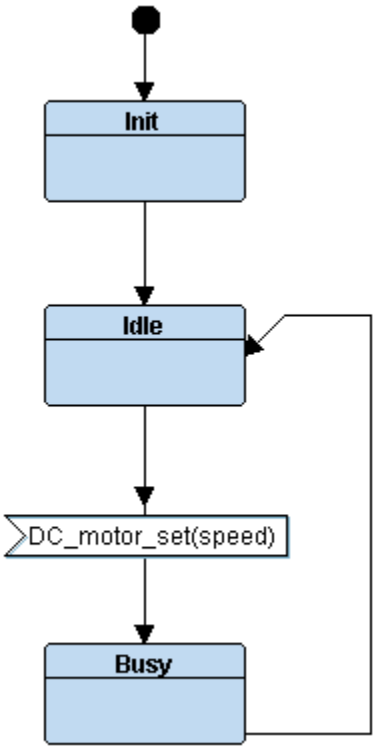
State Machine for US Sensor



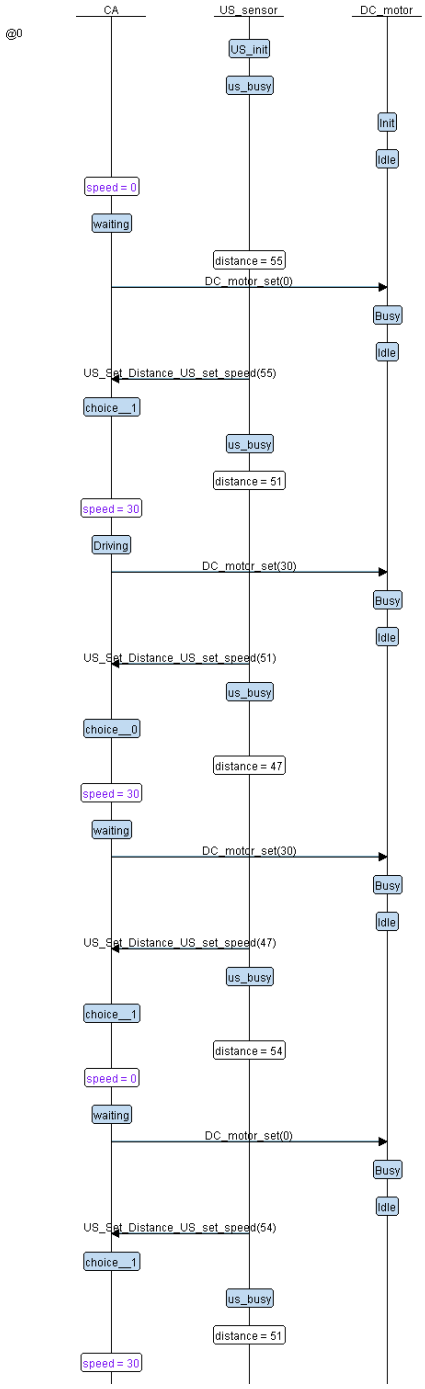
State Machine for Collision Avoidance

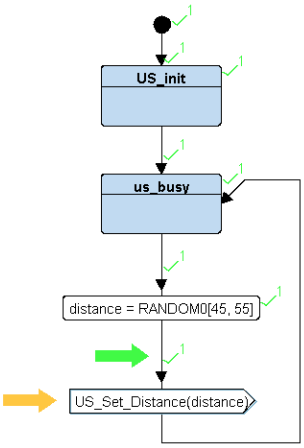


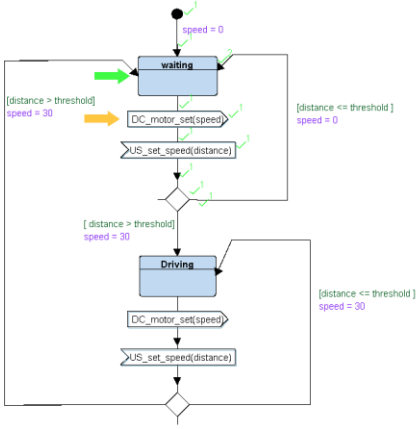
State Machine for DC Motor

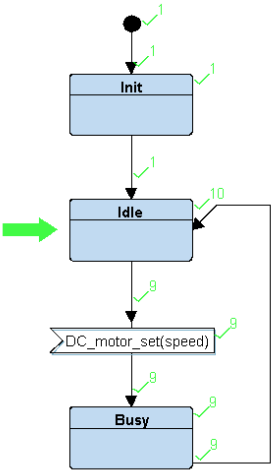


System Testing



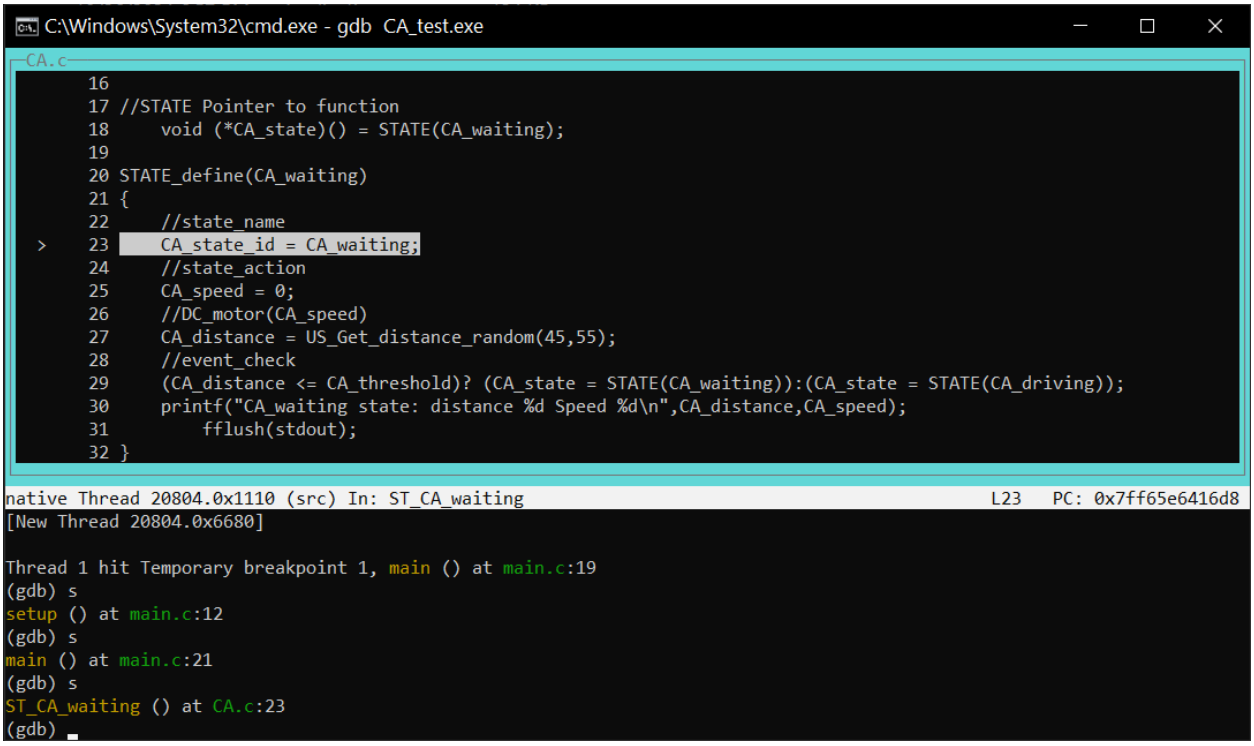






Implementation

Debugging using GDB



Implementation Results