ADAS
Project Proposal

Supervised by:

Dr : Ahmad Mostafa

Meet our team

Mohamed Ali

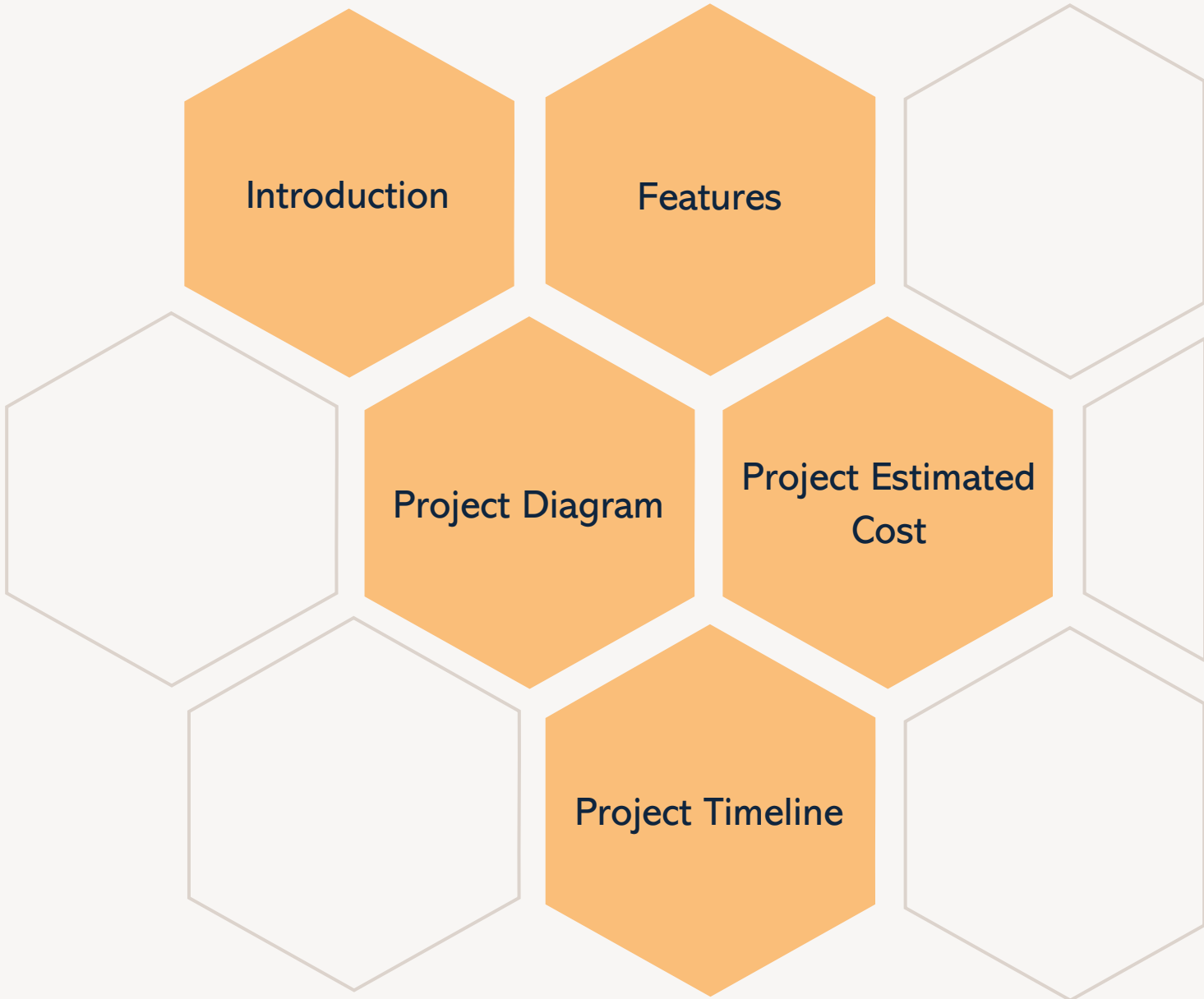
Mohamed Ibrahim

Omar Rashad

Salem Ali

Mustafa Ali

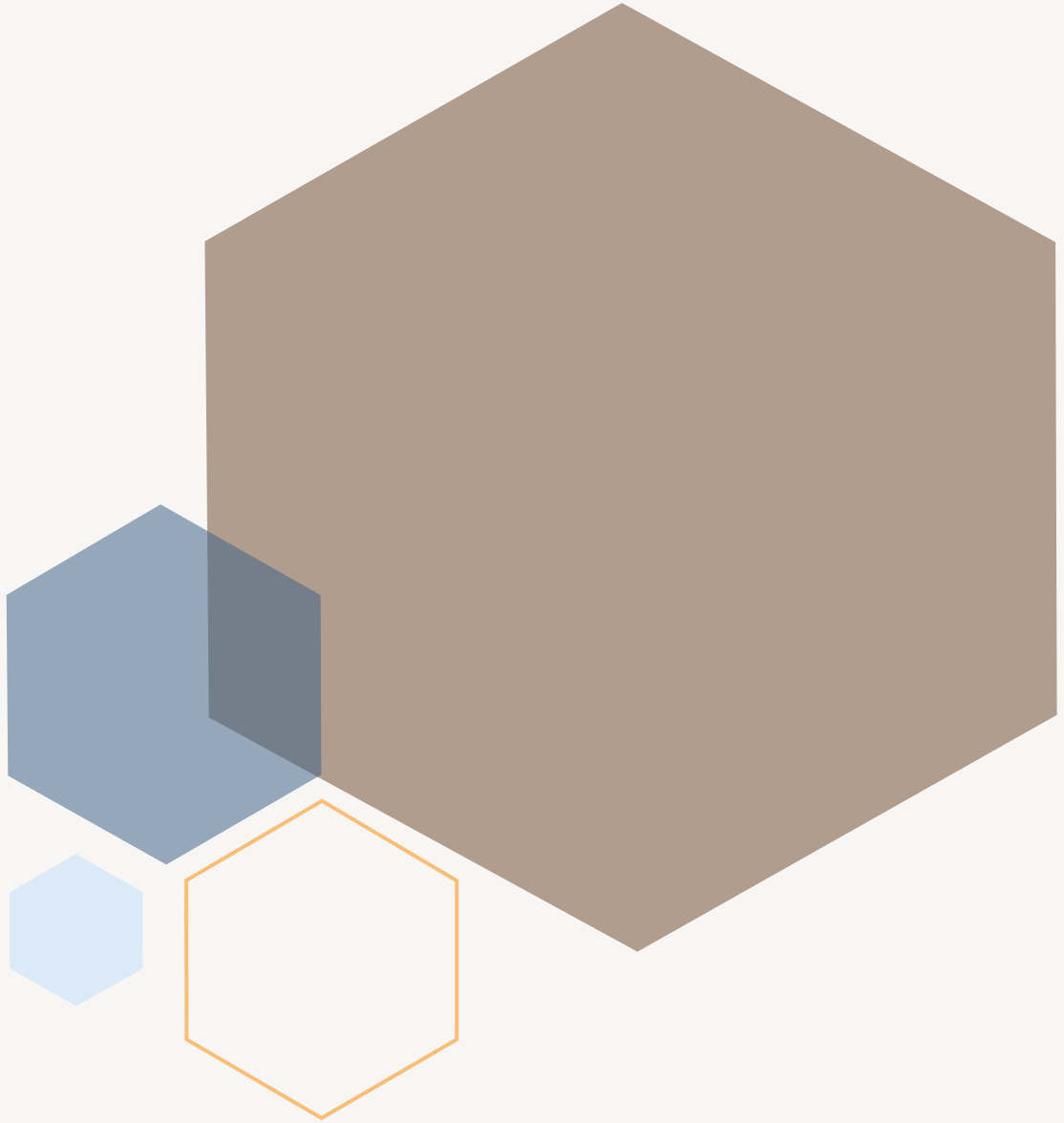
Agenda


Introduction
Features
Project Diagram
Project Estimated Cost
Project Timeline

Introduction

In today's rapidly evolving automotive landscape, road safety is a top priority. The project is dedicated to improve driving safety by harnessing the power of Advanced Driving Assistance Systems (ADAS) and innovative sensor technology. Our project focuses on integrating essential ADAS features, including Lane Departure Warning (LDW), Forward Collision Warning (FCW), Traffic Sign Recognition, and a revamped Driver Monitoring System (DMS) to deliver a comprehensive and personalized safety experience to drivers

Features



Project Features

Lane Departure Warning (LDW)

Forward Collision Warning (FCW)

Driver Monitoring and Reporting System (DMRS)

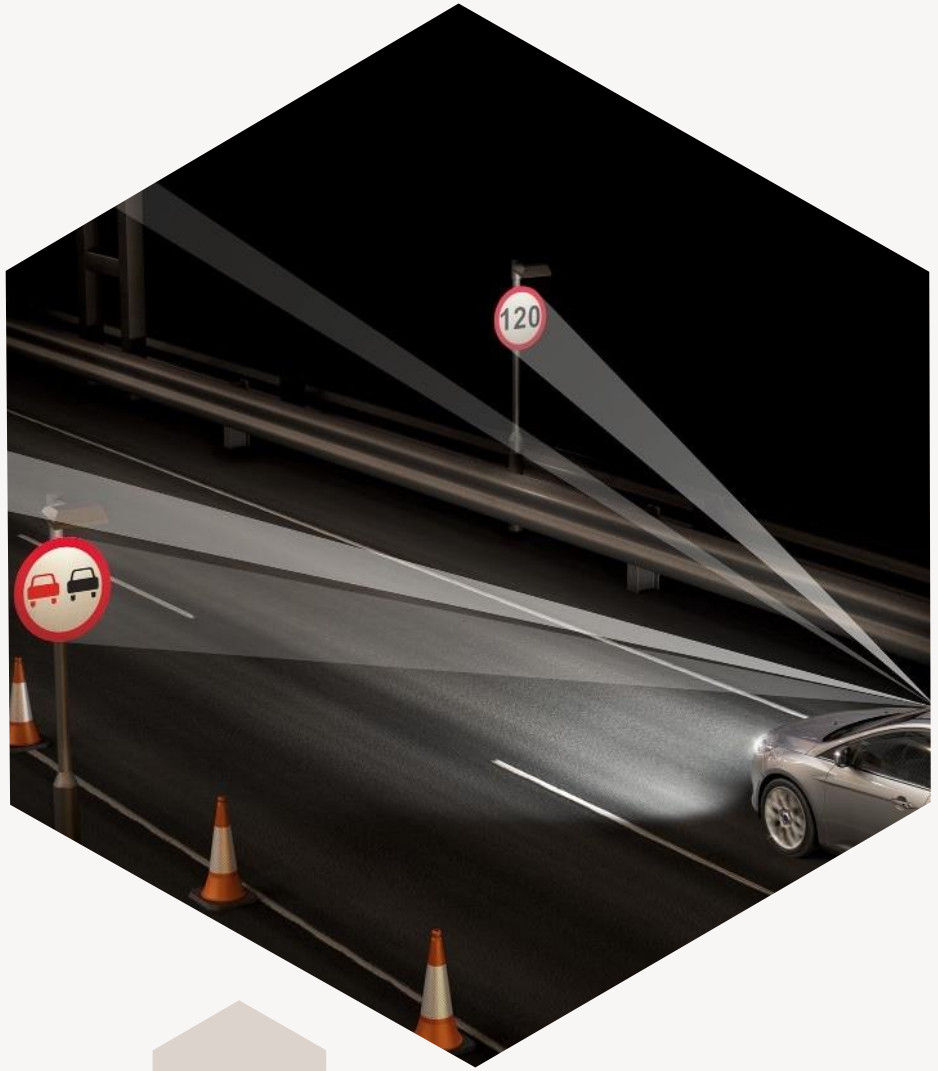
Traffic Sign Recognition

Driver Monitoring and Reporting System (DMRS)

Our DMRS reads various car sensors to analyze driver behavior, including swerves, hard braking, and incorrect cornering. Daily reports are generated and delivered via the mobile app, highlighting instances of unsafe driving behavior. The DMRS offers personalized advice on how to drive safely, promoting improved driving habits over time.

Traffic Sign Recognition

Leveraging machine learning algorithms and car sensors, our system recognizes and interprets road signs. Real-time information on relevant traffic signs is relayed to the mobile app, enhancing driver awareness. Traffic Sign Recognition ensures compliance with traffic regulations and minimizes violations



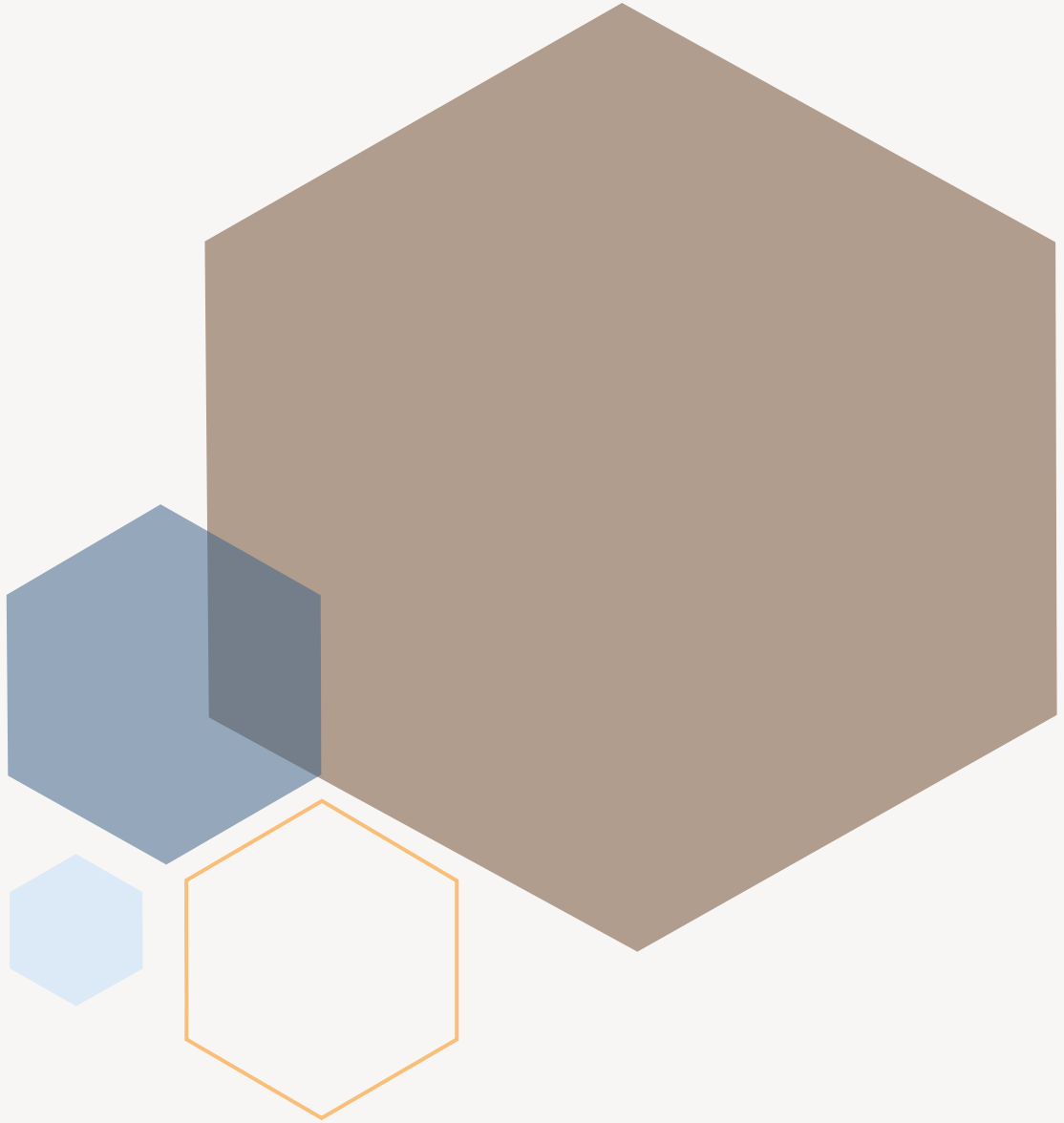
Forward Collision Warning (FCW)

FCW utilizes radar and sensor technology to monitor the distance between the vehicle and objects ahead. It issues timely warnings through the mobile app if a collision is imminent, enabling quick, preventative actions. FCW significantly reduces the risk of rear-end collisions, particularly in congested traffic scenarios.

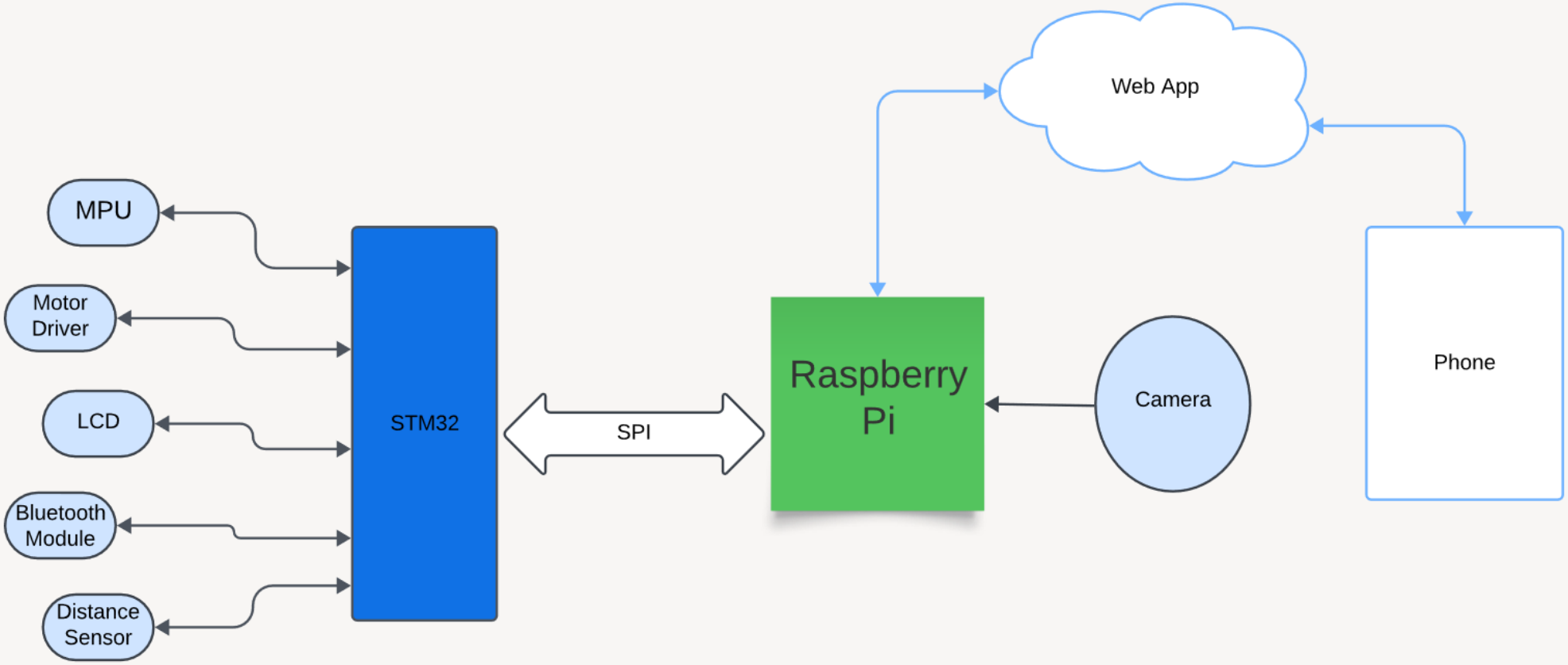
Lane Departure Warning (LDW)

Our system employs advanced computer vision to detect when a vehicle unintentionally drifts out of its lane. It provides real-time alerts to the driver, reducing the risk of dangerous lane departure incidents. LDW helps prevent accidents caused by drowsiness, distraction, or momentary lapses in attention.

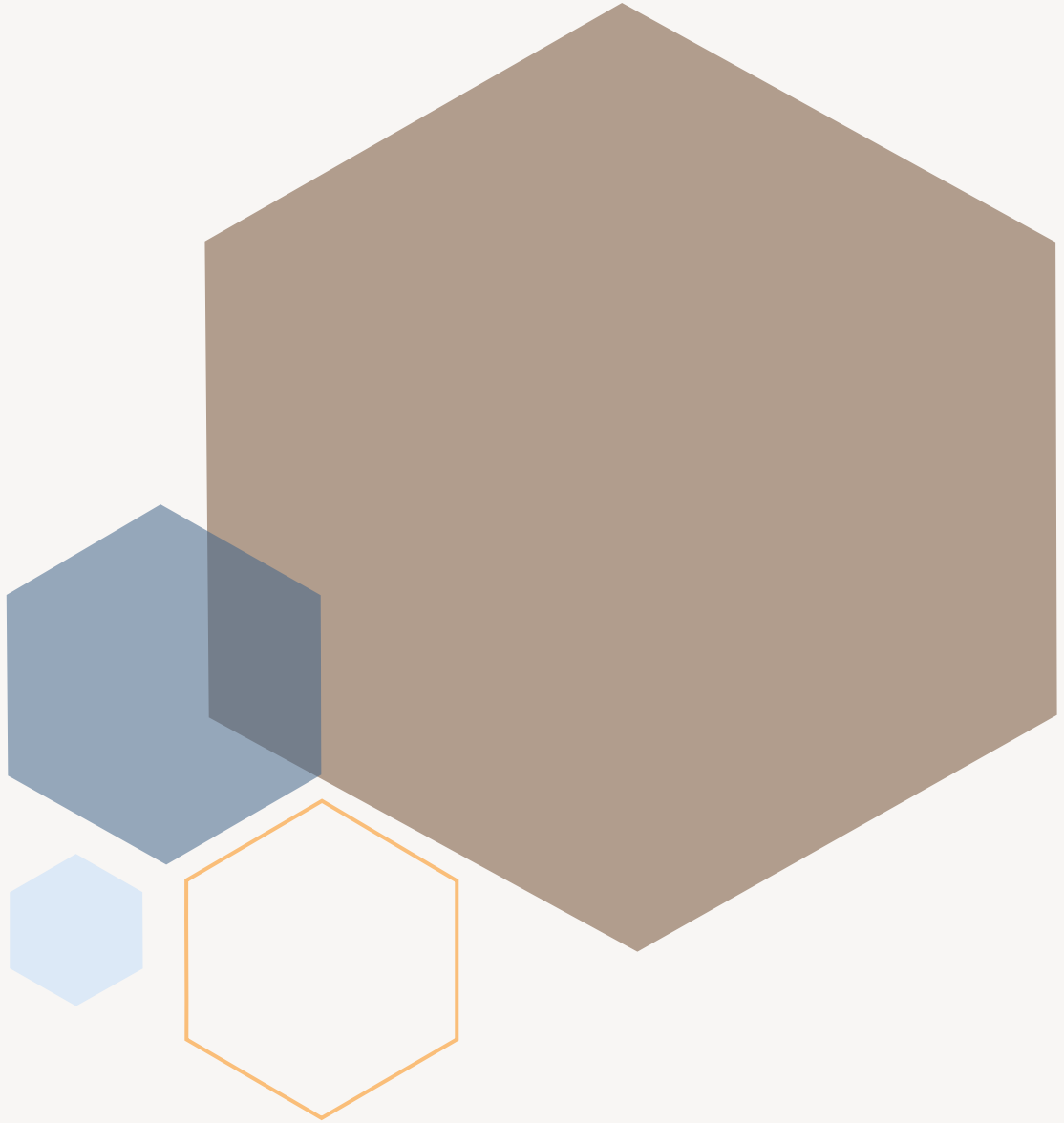
Project Diagram



Project Diagram



Estimated Cost



Project Estimated Cost

Total Cost > 10750

- Raspberry Pi 4
- Jetson Nano

- Price : 6400
- Price: 12500

Motor Driver

Price: 700

- Lidar
- Radar
- Ultrasonic

Power Supply

Price: 200

Car Maquette

Price : 300

Camera

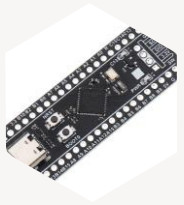
Price: 1500

4 Motors

Price : 1000

MPU 6050

Price: 150



STM32 Black Pill

Price : 300

Bluetooth HC-05

Price: 200

Bought Components

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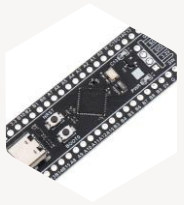

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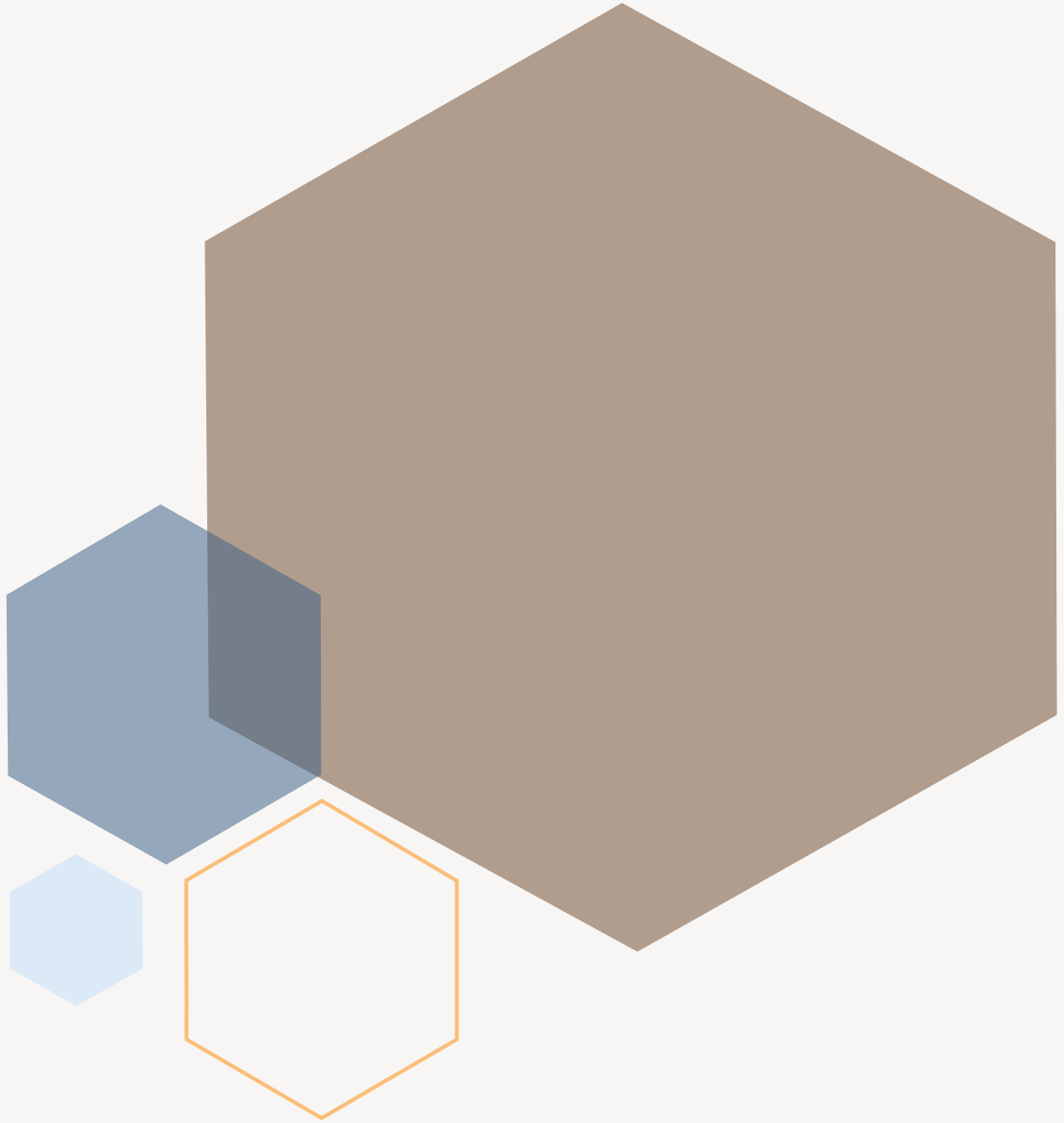
Project Timeline



Timeline

25 Jan 2024

- Driving Monotoring Model
- Traffic sign recognition model

25 Feb 2024

- Hardware Installation.
- Installing ,developing the two models and testing.

25 Mar 2024

- Lane deprature warning model.
- Installation and testing.

20 Apr 2024

- Forward collision warning model.
- Installation and testing

15 Jun 2024

- Integrate all models and hardware.
- Testing the project.

Current Progress

- Bought the car maquette and some components.
- Implemented and tested the motor driver control module.
- For the Driving Monitoring Model:
  - Literature survey
  - Data collection
- For the Traffic Sign Model:
  - Literature survey
  - Implemented a CNN model

Any Questions?




Thank you!

If you have any questions feel free to contact us!