Automated Vehicle Fitness test

Team CodeRed

Problem Statement

Automation of Vehicle Fitness Test

As per Motor Vehicle act, all commercial vehicles are mandated to undergo fitness test periodically, depending on vehicle age. The vehicles are to be brought to designated fitness centres (which are normally one centre per district in most states) for inspection and certification. There are normally long queues and the process is hassle some. An innovative solution is required to ease this process for all.

Motivation

Prevention of Accidents

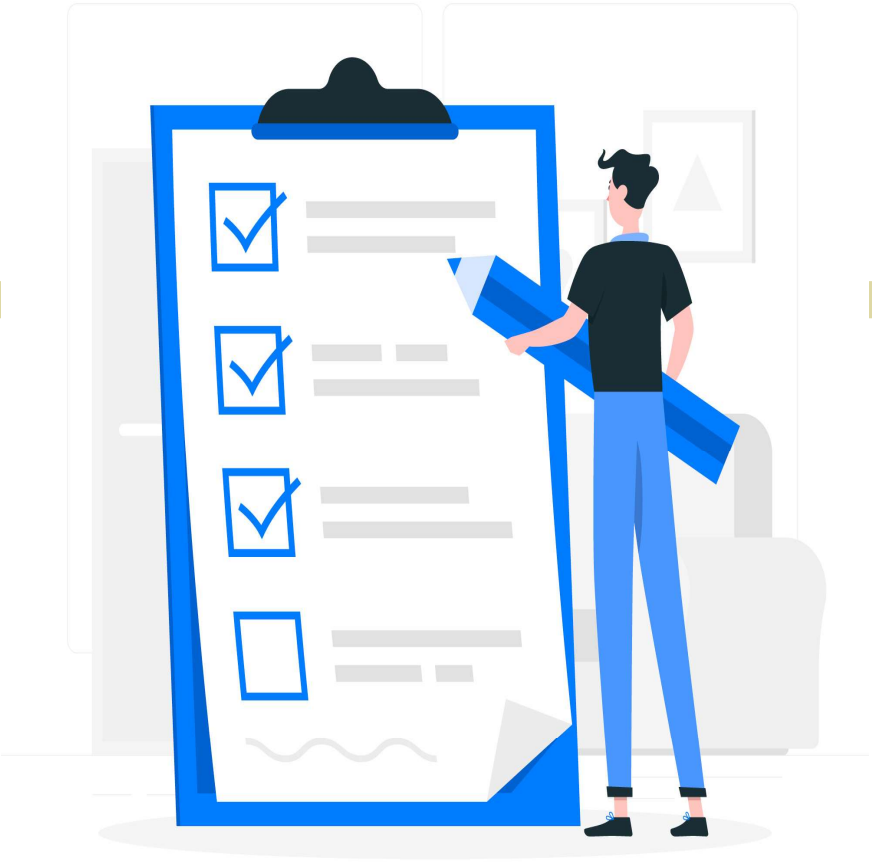
Importance for emergency vehicles

Repairs and Malfunctions

Time Taking

Negligence due to long procedure

High Costs



Tests to be Done

- Speedometer and Brakes
- Steering and wheel alignment
- Sound Tests: Brakes, Engine and Horn
- Lighting Tests : Head lights, Indicators and Glass Transparency
- Seat Belts and body currents
- Structure of Body

Solution

Section 1: Connections

Manual Intervention needed to place the vehicle and connect OBD and pollution tester to silencer.

Section 2 : Testing

All the tests will be done one by one and the reports are to be processed.

Section 3 : Processing

The readings are then processed to get the required results. Some result may undergo ML models to get the report.

Section 4 :Reporting

The report from individual tests as well a percentage of which a vehicle is eligible to travel on road and also preferred suggestion will be provided.

Photometric sensor

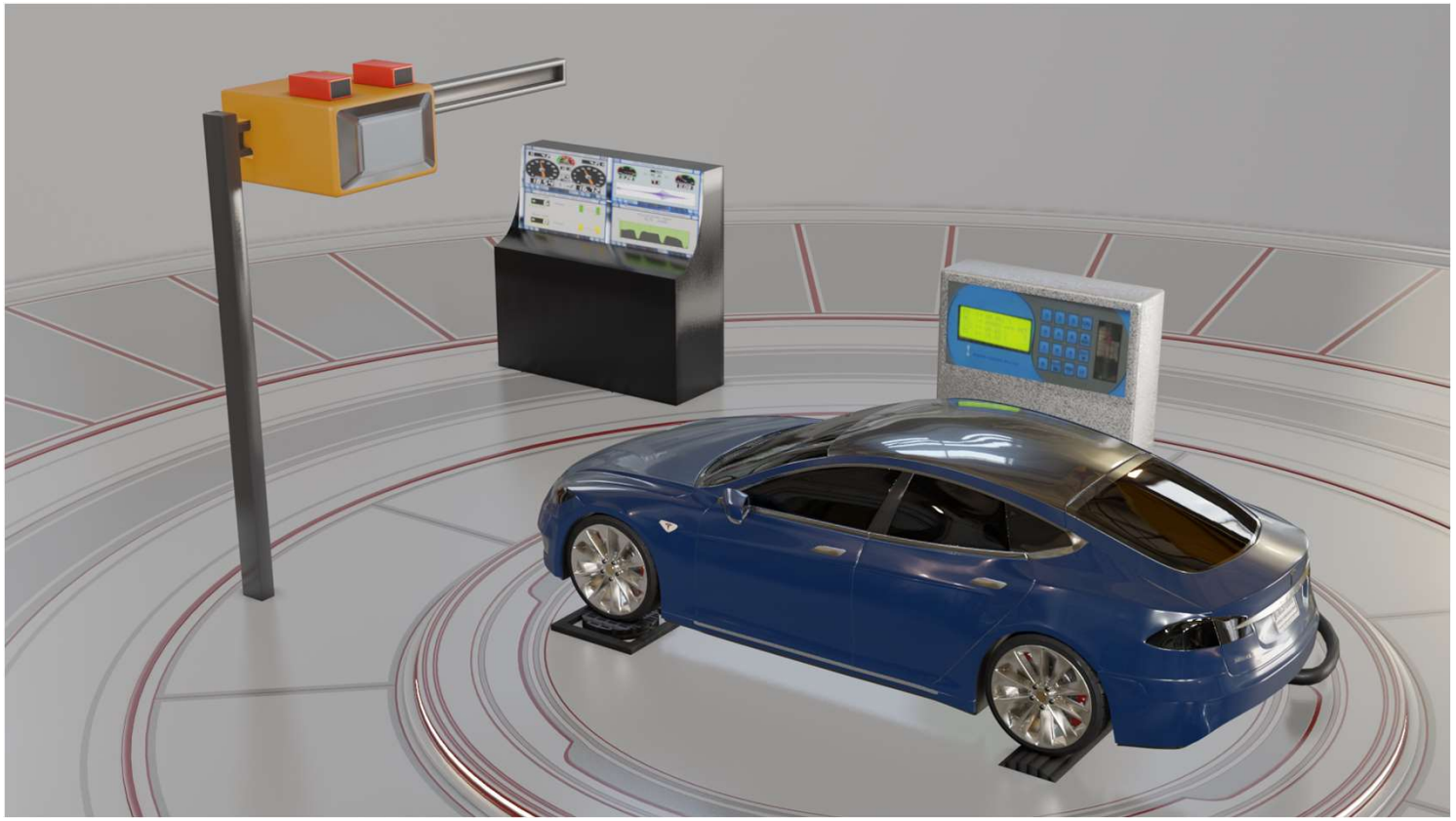
Microphone

Sensors

The retro-reflective type laser sensor can detect glass plate for automotive windows even if its thickness and width varies

Camera sensor

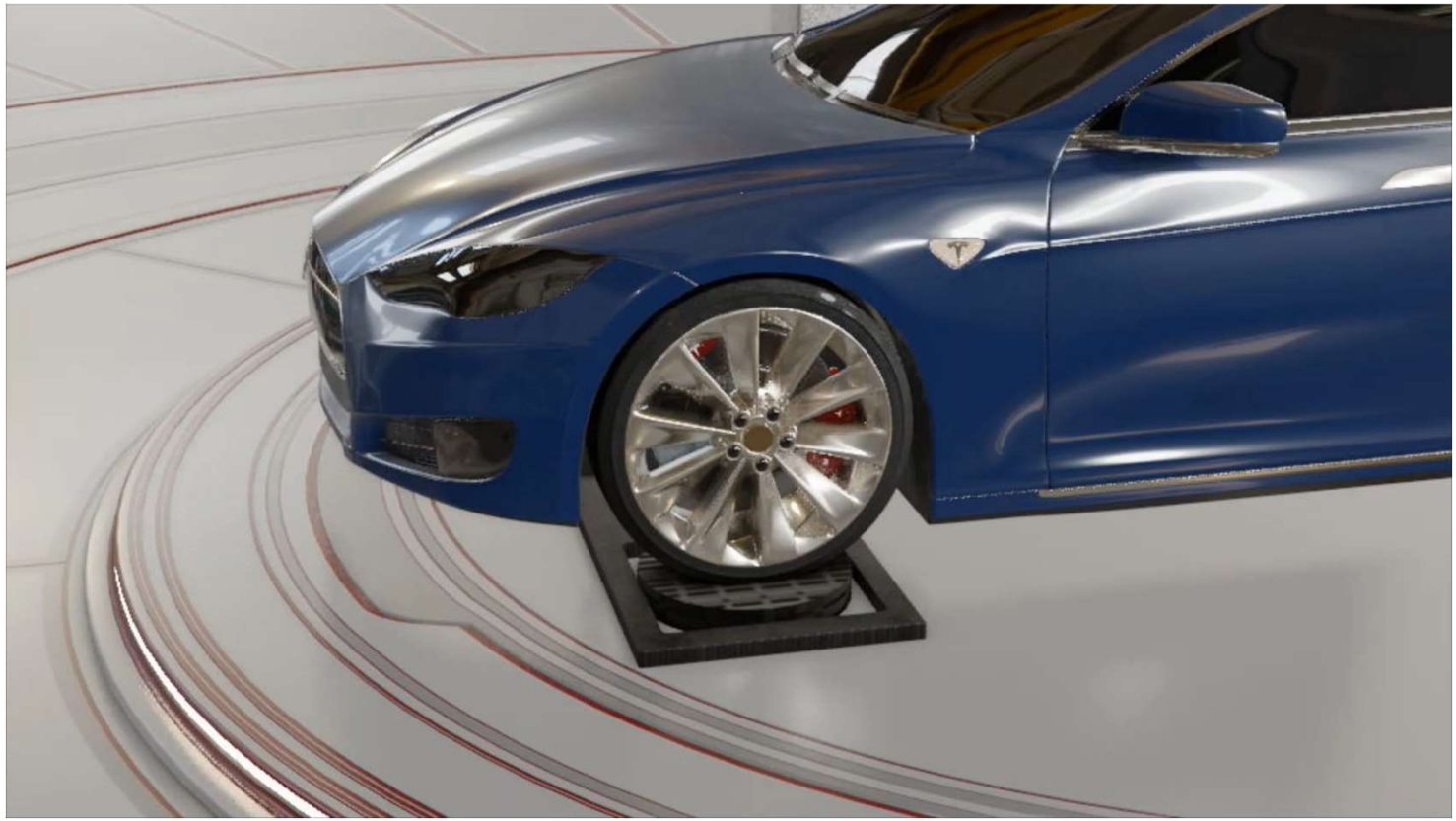
Model



Wheel and steering alignment

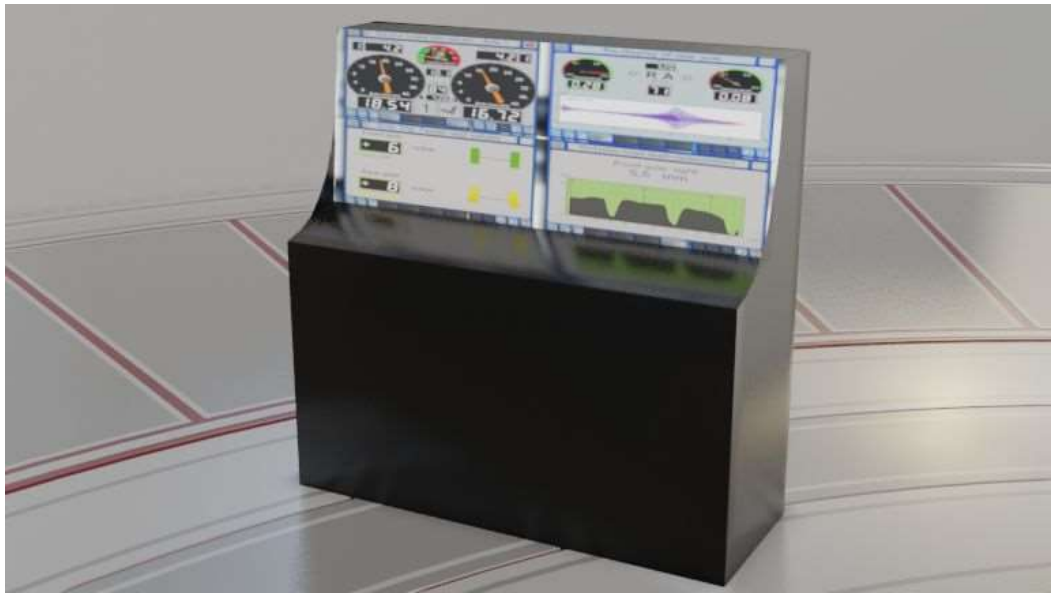
Speed, acceleration and breaks

Suspension testing



Other tests done through sensors in the box

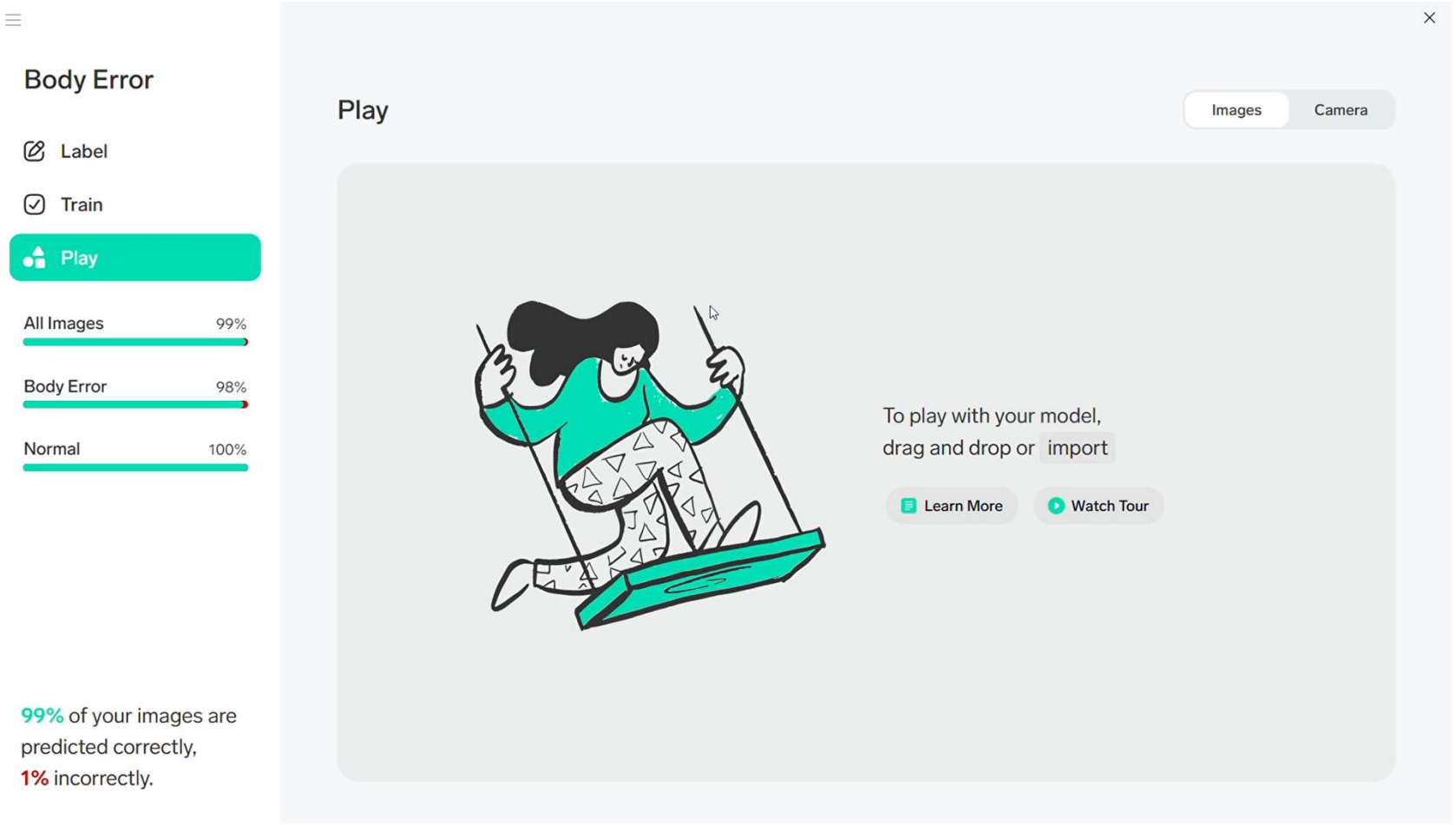
Pollution



P01 Fuel and Air Metering
P02 Injector Circuit
P03 Ignition System
P04 Auxiliary Emissions Control
P05 Vehicle Speed Control and Idle Control
P06 Computer Output Circuits
P07 Transmission
P08 Transmission
B00 Body, including airbags and seatbelts

OBD 2 port which is connected to get the on vehicle details for testing

C00 ABS
C01 Brake Hydraulics
C02 Wheel Speed Sensors and Traction Control
C03 4WD
C04 Steering
C05 Steering
C06 Suspension and Levelling
C07 Tire Pressure
C08 Suspension and Levelling
U00 Communication Bus
U01 Lost Communication With Sensor
U02 Lost Communication With Sensor
U03 Software Incompatibility
U04 Invalid Data Received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All Images 99%
Body Error 98%
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99% of your images are predicted correctly,
1% incorrectly.
Play
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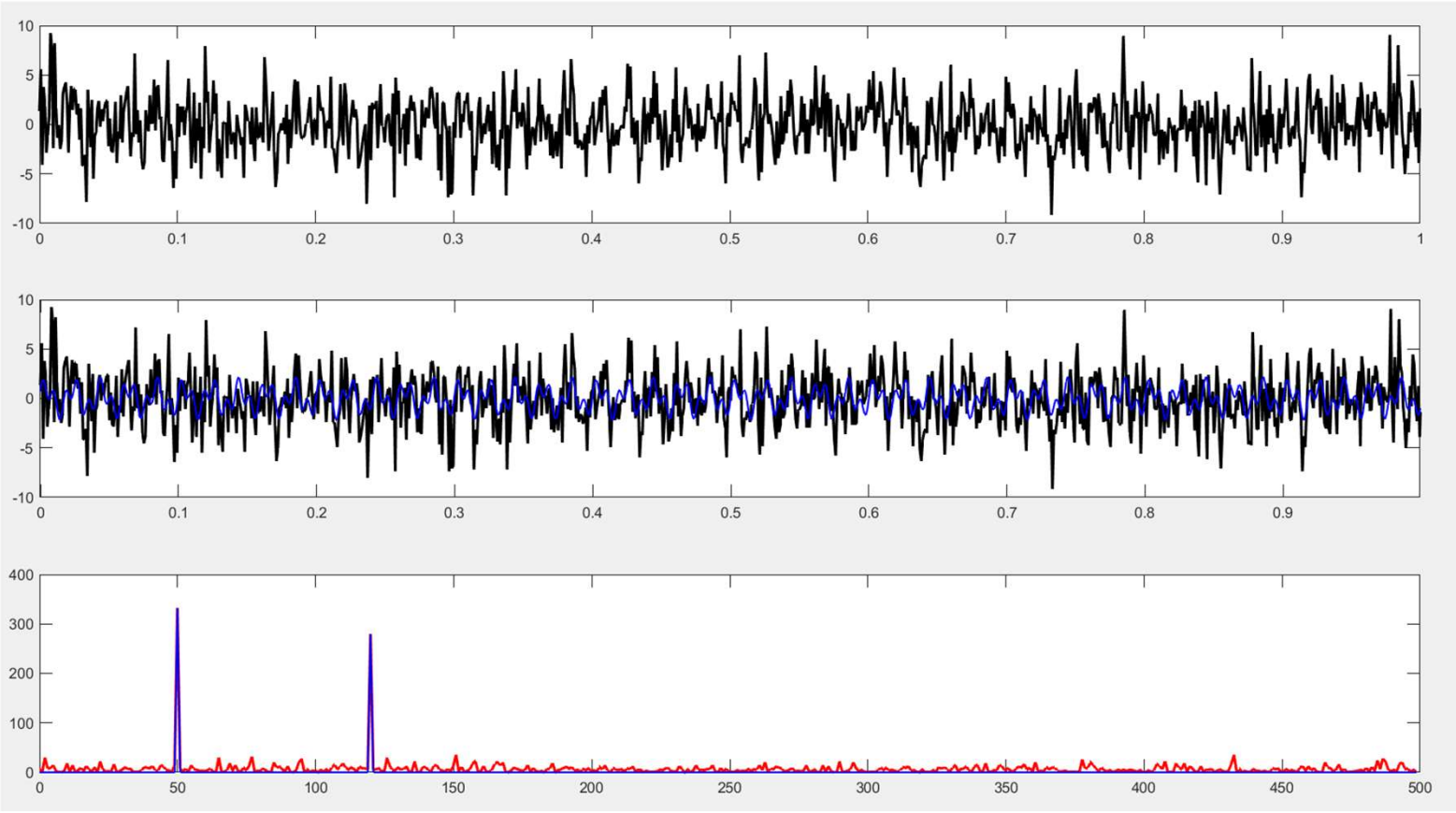
Camera
To play with your model,
drag and drop or import
Learn More
Watch Tour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Features

Report which can be easy to understand and as well as in Regional Languages.

Easy and Fast construction with less Space requirement

Reminding the next Test

Very Fast

Less Manual Intervention and contact less

Developments to be done

- Number Plate recognition to be developed and implemented so that Vehicle number can be taken and results linked with vehicle.
- Preparation of a application for taking the details of the and reporting it with required suggestions.
- Adding more degrees of freedom for more movement of arm for more different angles to capture more information.
- Adding battery and Battery management system Assessment for electric vehicles. We already worked on Intelligent battery management.

OUR TEAM SLIDE

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