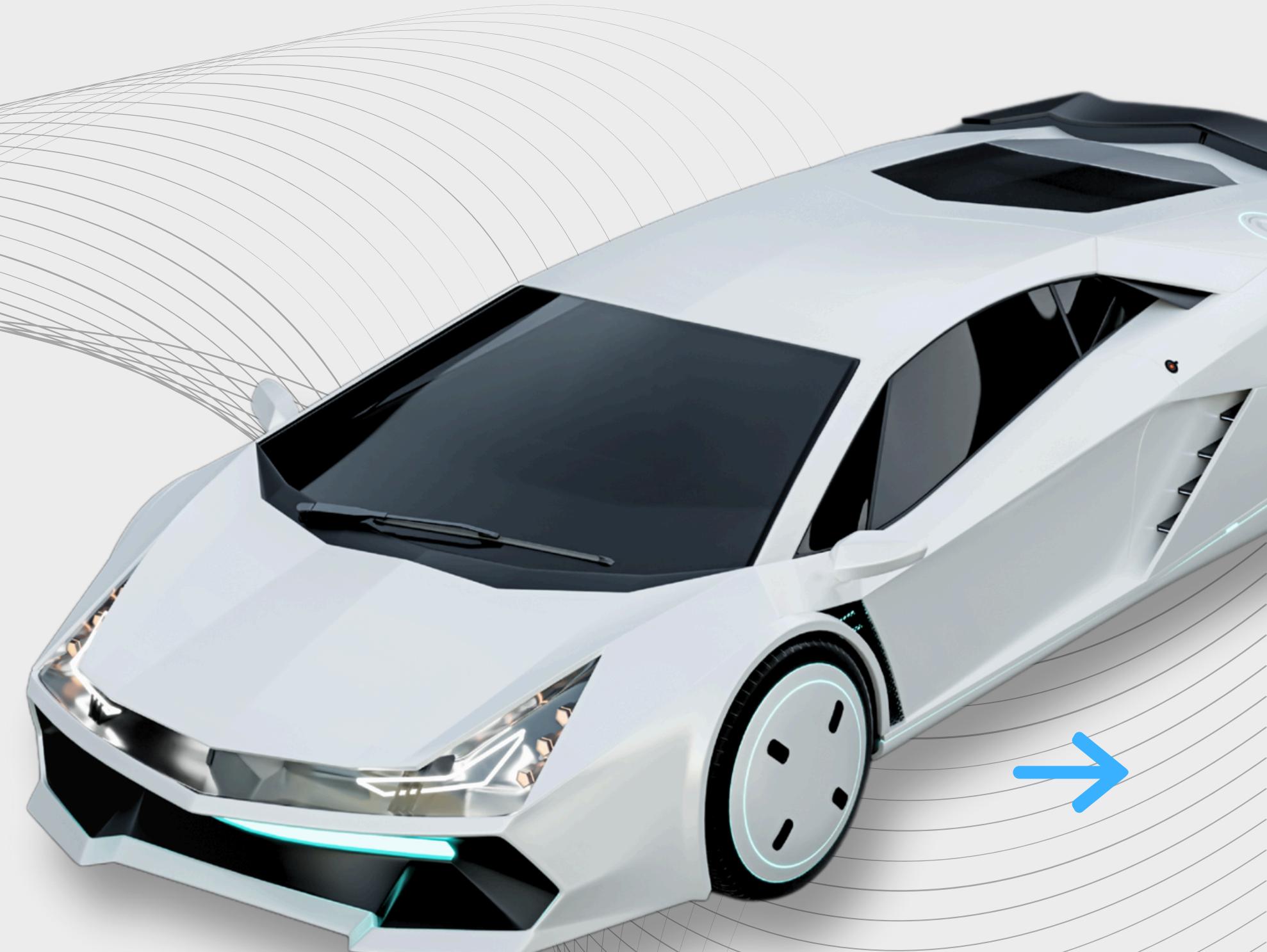


SUPPORT SYSTEM FOR MONITORING STARTUP AND PARKING PROCEDURES FOR NEW DRIVERS



TEAM WECAN

CODERACE 2025



Problems Addressed by Our System

Target users: inexperienced or novice drivers who need additional guidance and safety support

Unreleased Parking Brake During Takeoff

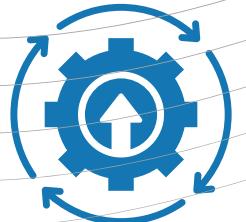
Drivers – especially new ones – may forget to release the parking brake when starting to drive, leading to dangerous situations or damage to the braking system.

Unsafe Vehicle Parking State Before Exit

When preparing to exit the car, drivers may forget to shift to Park (P) or apply the parking brake, increasing the risk of vehicle rollaway.

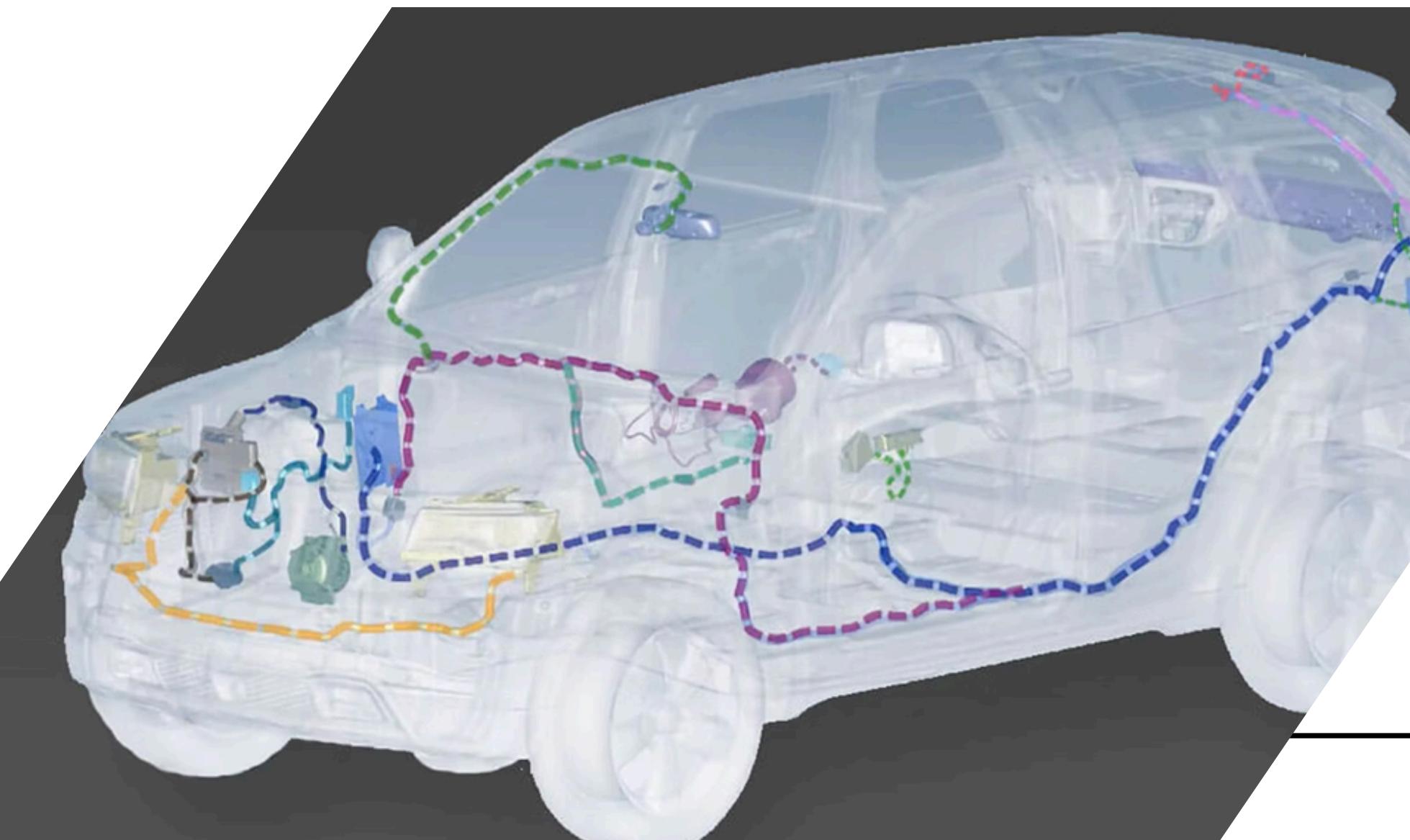
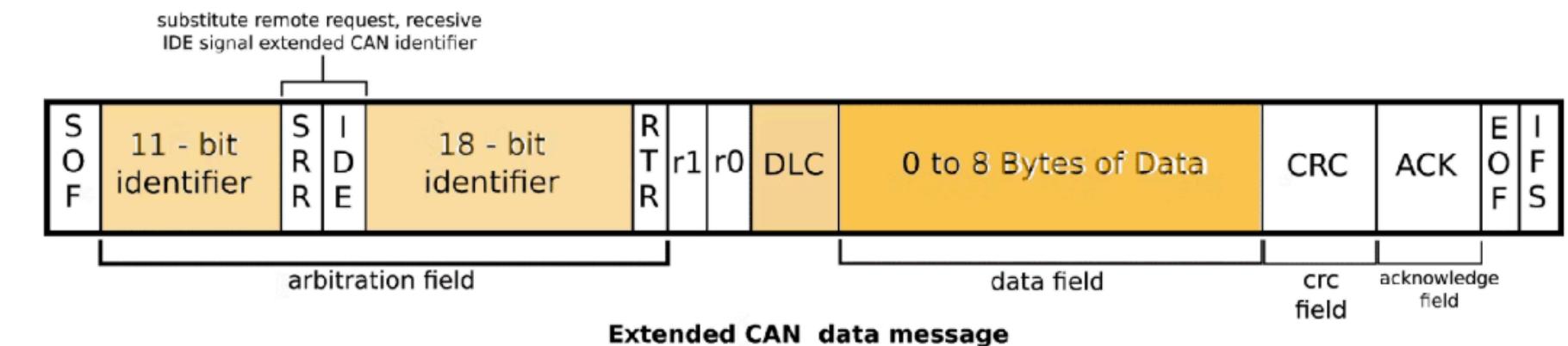
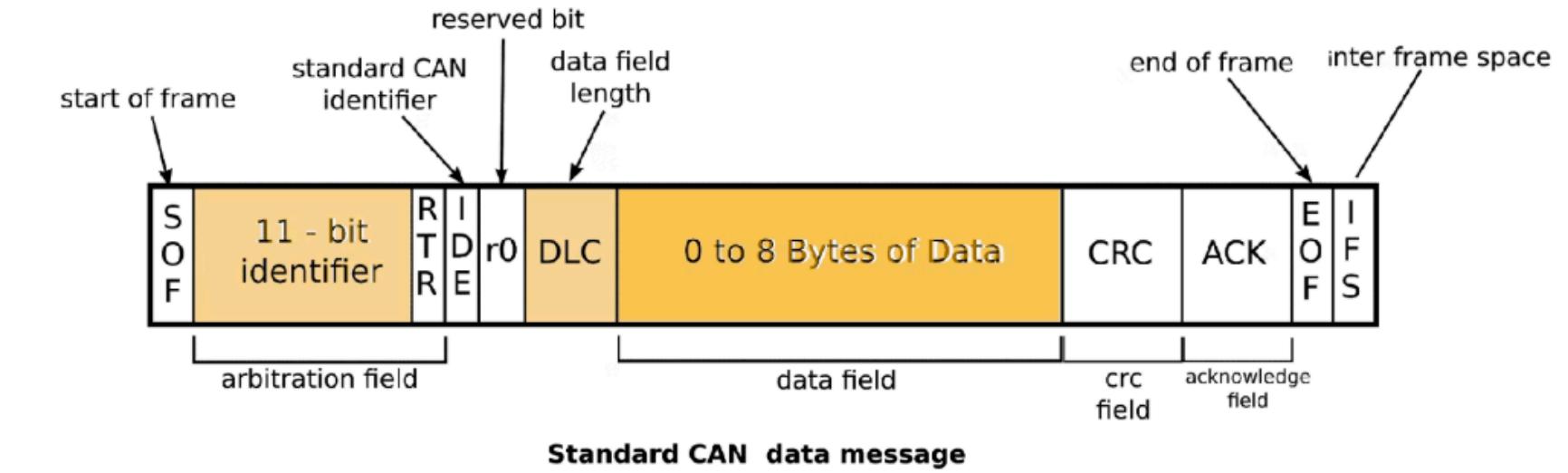
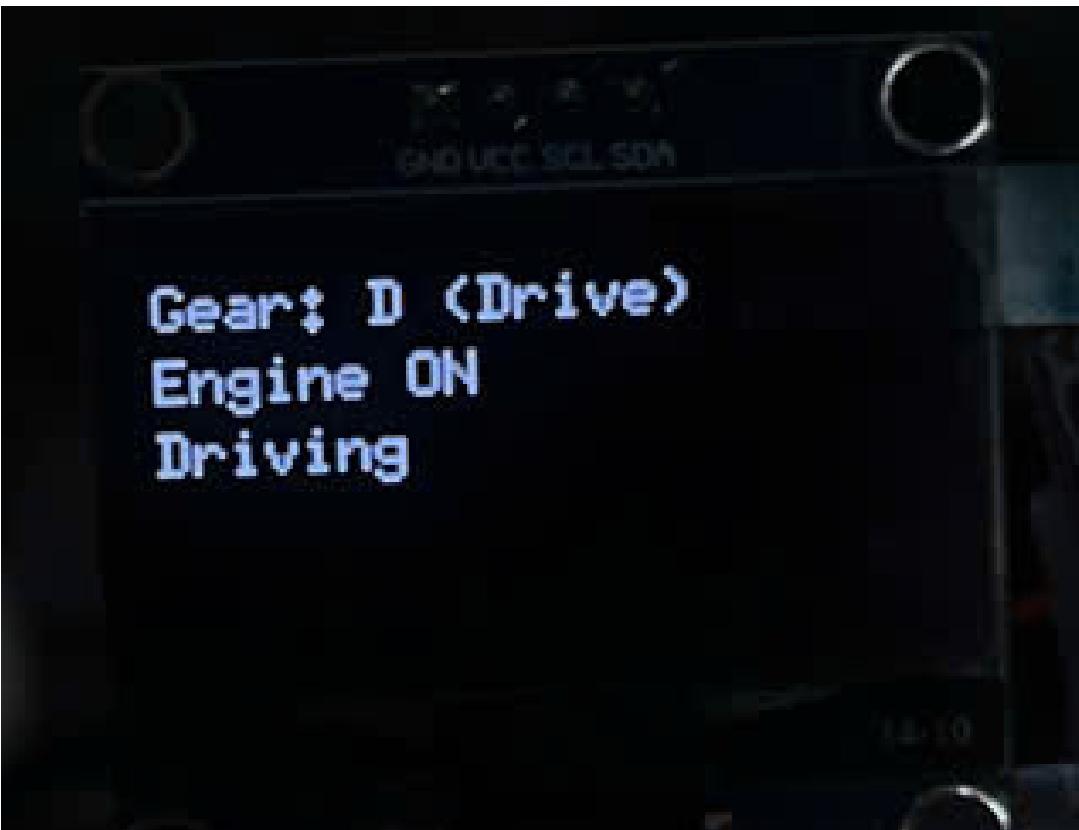
Stall-Induced Panic in Novice Drivers

In case of a sudden engine stall, inexperienced drivers may panic and forget to hold the brake pedal, potentially causing the vehicle to move unintentionally – especially on slopes.

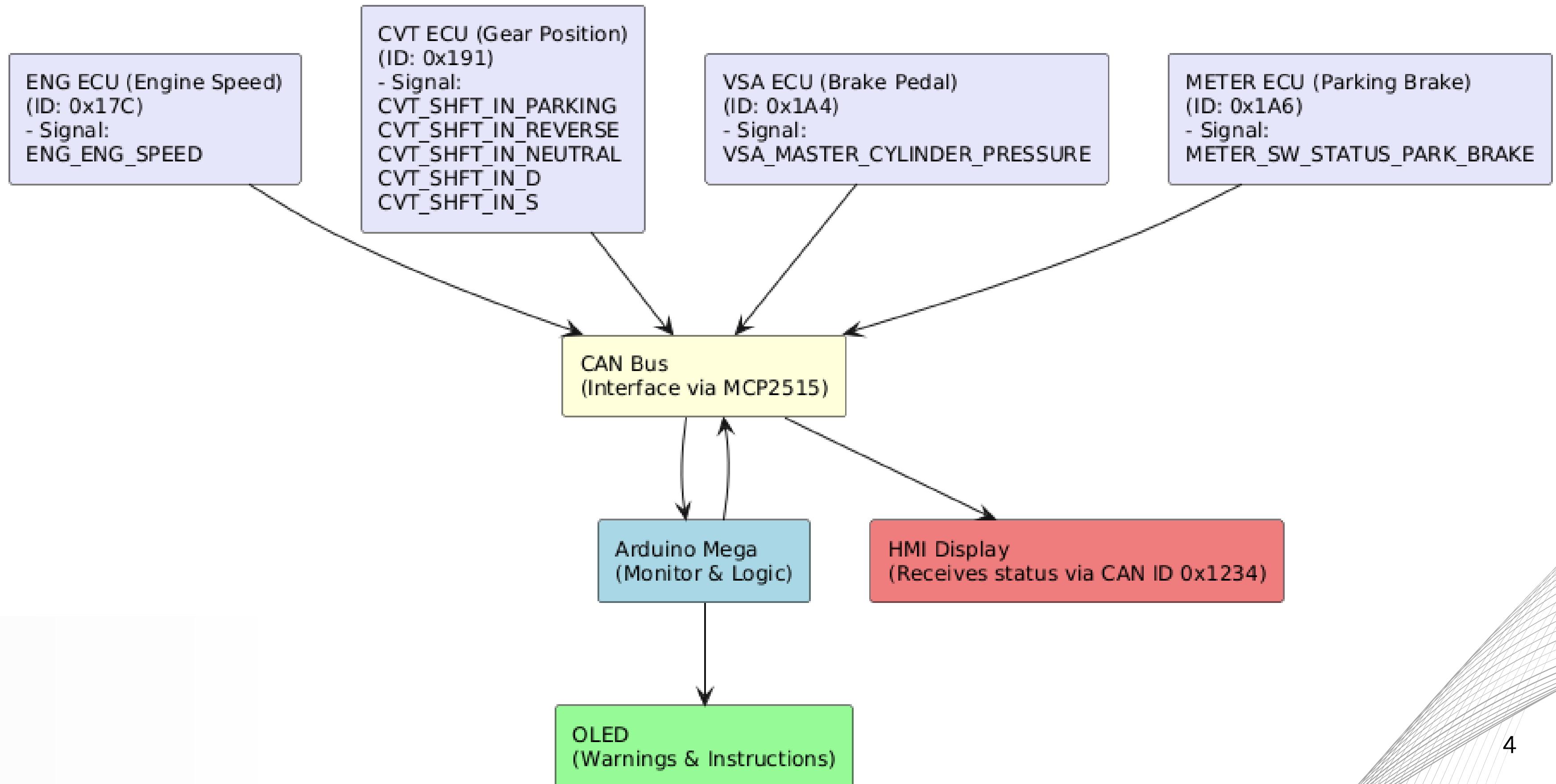


Solution

We read real-time CAN data, analyze key signals (brake, gear, engine), and generate targeted alerts. Messages appear on the HMI and OLED display, guiding inexperienced drivers to respond safely.

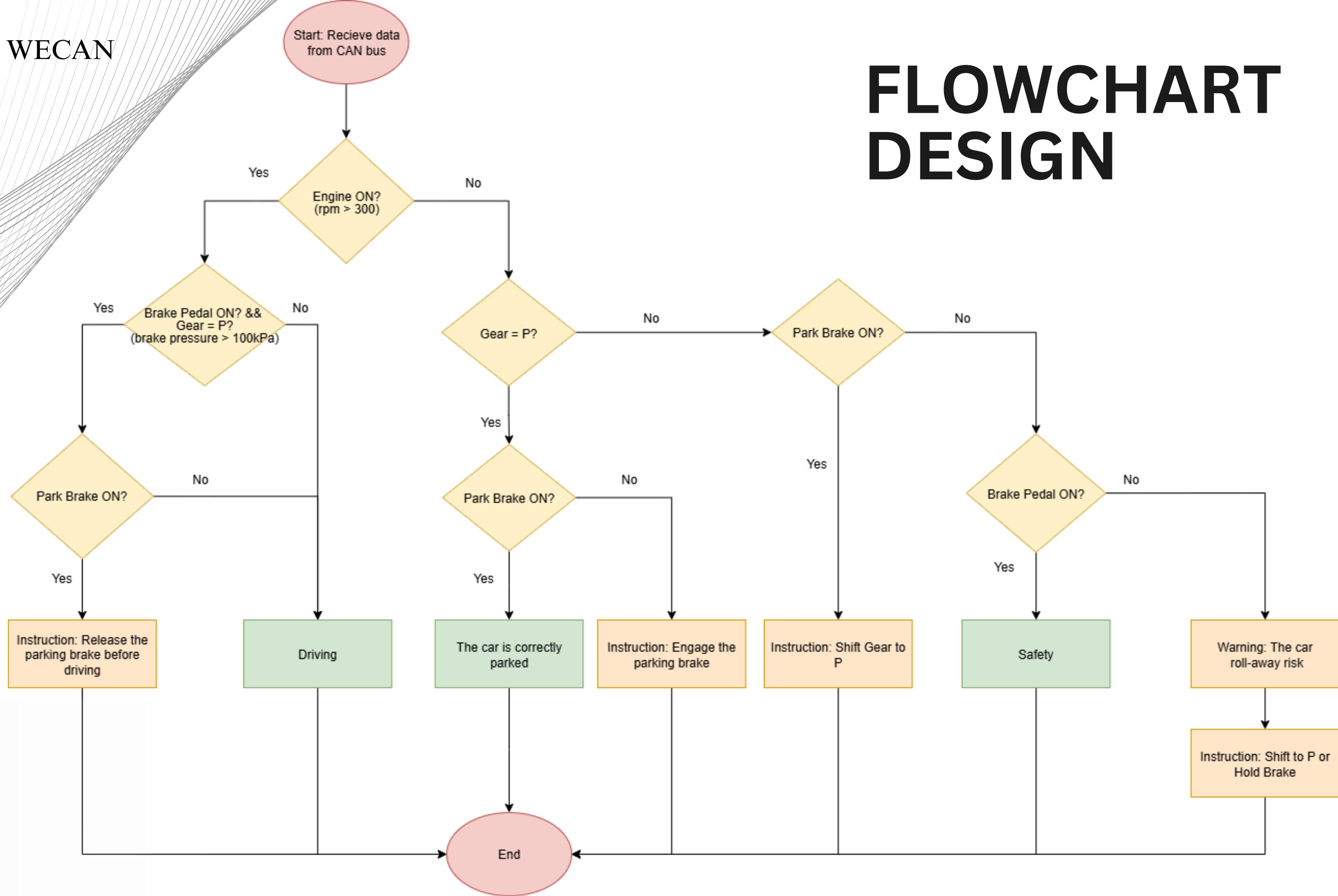


System Overview





FLOWCHART DESIGN



Test Case 1: The Car Started

Input signal

ENG_ENG_SPEED
=900 rpm

VSA_MASTER_CYLIN
DER_PRESSURE =
150kPa

CVT_SHFT_IN_
PARKING = 1

METER_SW_STATUS
_PARK_BRAKE = 1

Algorithm

Engine speed > 300rpm
→ The engine is **ON**

Brake pressure > 100kPa
→ The brake pedal is **pressed**

The gear lever is **in P**
(Parking) position

The parking brake **is engaged**

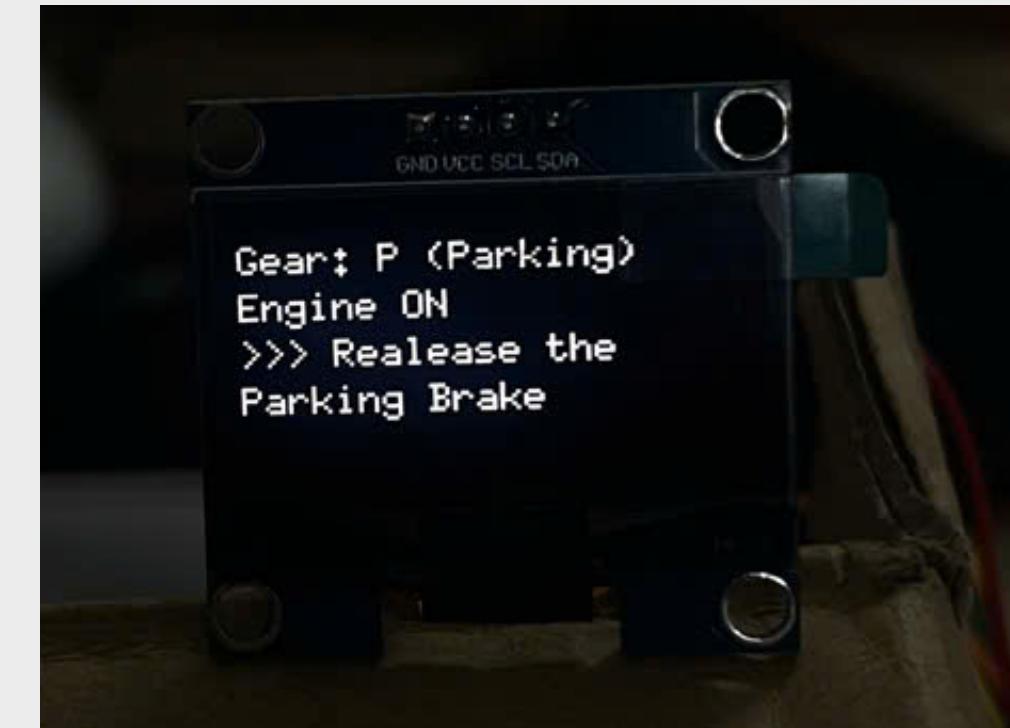
Warning

Instruction

Displays a warning to the driver

Release the Parking Brake before driving

Output



Test Case 2: No Engage Parking Brake

Input signal

ENG_ENG_SPEED
=100 rpm

VSA_MASTER_CYLIN
DER_PRESSURE =
0kPa

CVT_SHFT_IN_
PARKING = 1

METER_SW_STATUS
_PARK_BRAKE = 0

Algorithm

Engine speed < 300rpm
→ The engine is **OFF**

Brake pressure < 100kPa
→ The brake pedal is **not pressed**

The gear lever is **in P**
(Parking) position

The parking brake is **not engaged**

Warning

Displays a warning to the driver

Instruction

Engage the parking brake

Output



Test Case 3: Risk Of Car Rollaway

Input signal

ENG_ENG_SPEED
= 100 rpm

VSA_MASTER_CYLINDER_PRESSURE =
0kPa

CVT_SHFT_IN_PARKING = 0

METER_SW_STATUS
_PARK_BRAKE = 0

Algorithm

Engine speed < 300rpm
→ The engine is OFF

Brake pressure < 100kPa
→ The brake pedal is not pressed

The gear lever is **not** in P
(Parking) position

The parking brake is **not**
engaged

Warning

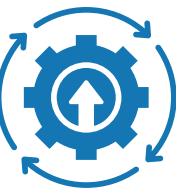
Instruction

The car roll-away risk

Shift to P or Hold Brake

Output





Signal



Seat belt

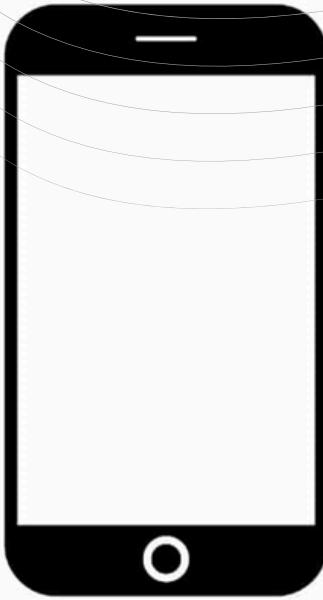
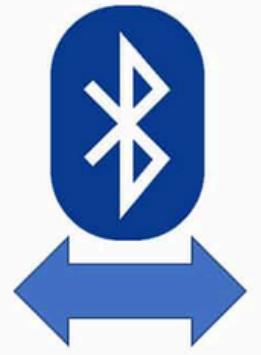


Car door

Warning



Buzzer



Upgrade MCU, develop app

**THANK YOU
FOR LISTENING**

