



Supra Team

# Supra Dashboard

Qt + Yocto + Low Level Apps Overview

PRESENTED BY

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# Agenda for the Presentation

## Overview of key sections covered

- Part 1: Qt Dashboard features and implementation
- Part 2: Yocto integration and image building
- Part 3: Low Level apps and data flow
- Interactive Q&A session following presentation

# Qt Section

Developed by Mahmoud Sayed

The Qt logo, consisting of the letters "Qt" in white on a green hexagonal background.

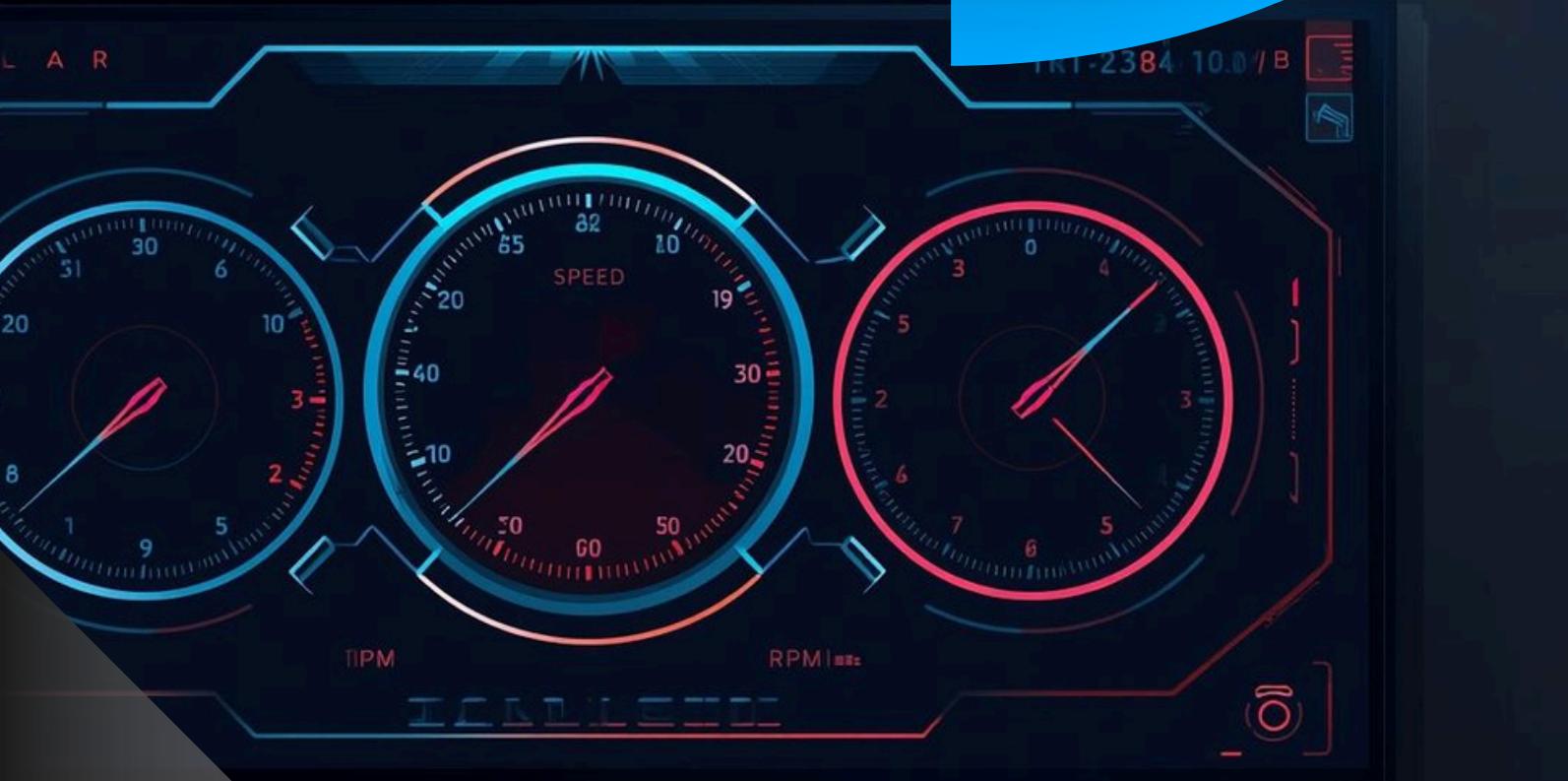
Qt



# System Architecture

- **C++ BACKEND LOGIC (CONTROLLERS)** → HANDLES HARDWARE AND SIMULATION.
- **QML FRONTEND UI (DASHBOARD)** → DISPLAYS ALL GAUGES, SIGNALS, AND GRAPHICS.
- **FILE- AND GPIO-BASED SENSORS** → SIMULATE REAL HARDWARE LIKE SEAT POSITION, COMPASS, AND TEMPERATURE.
- **MAIN APPLICATION** → INTEGRATES EVERYTHING AND MANAGES SIGNAL/SLOT COMMUNICATION.

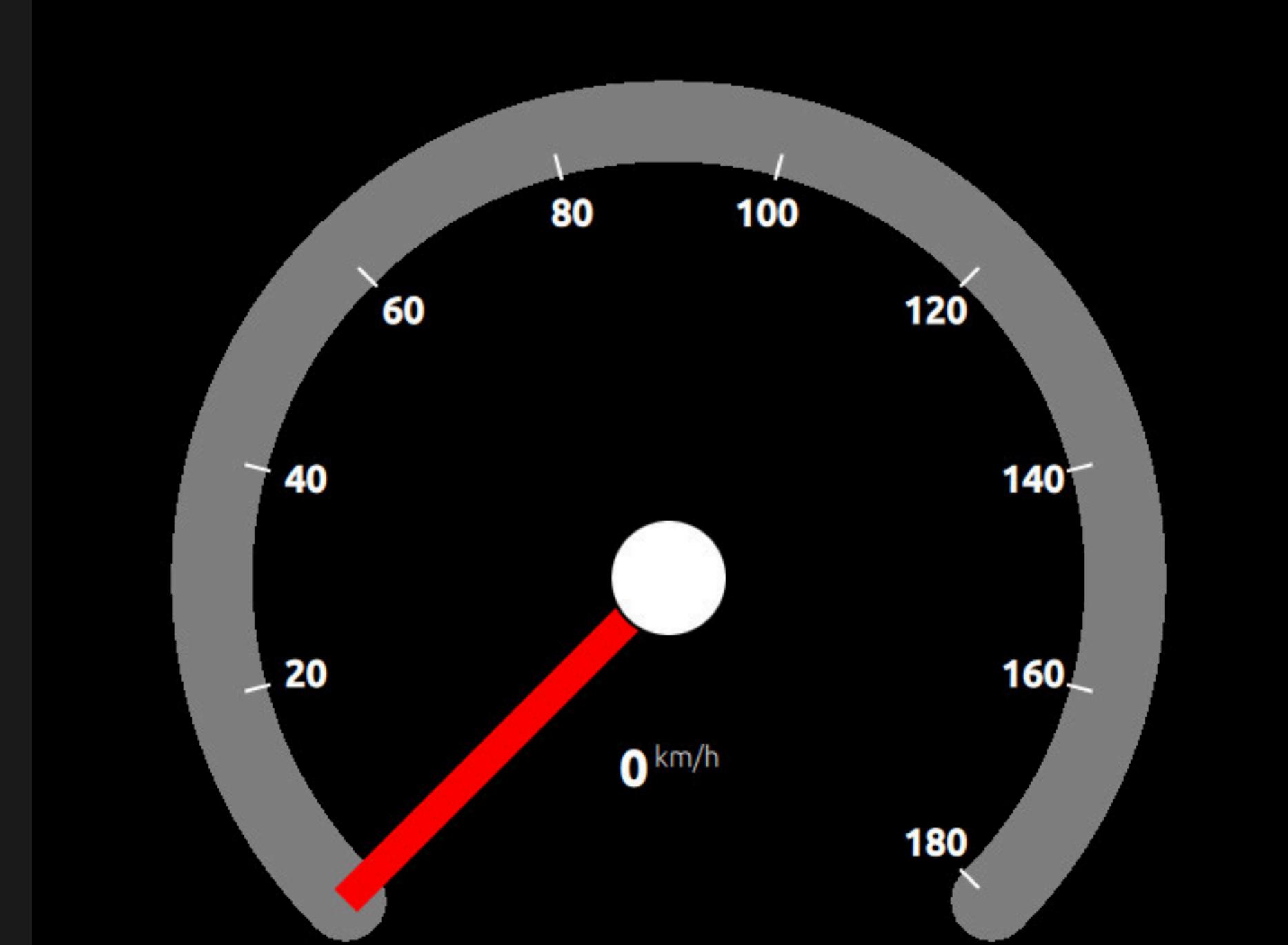
# Dashboard Overview



- **3 GAUGES: SPEED, RPM, TEMPERATURE**
- **SEAT SIMULATION & LED INDICATORS**
- **COMPASS & DIGITAL CLOCK**

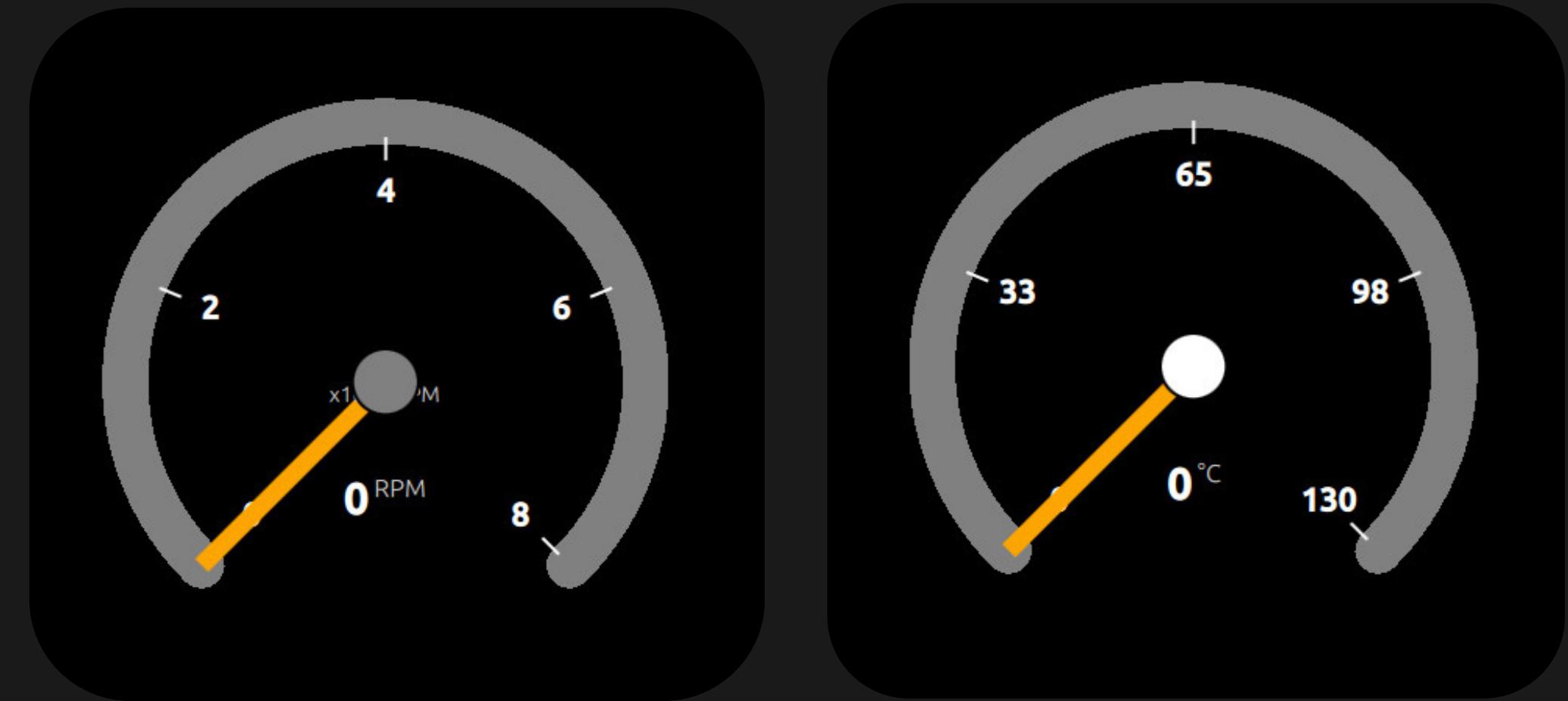
# Dashboard Overview

## SPEEDOMETER



# Dashboard Overview

## RPM & Temperture Gauges



# Dashboard Overview

## Seat & Led Indicators

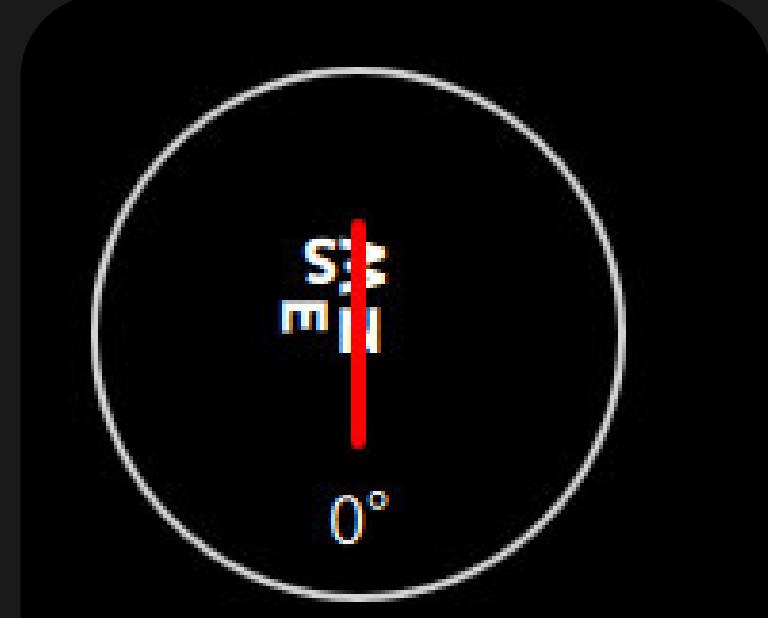


Seat



# Dashboard Overview

## Compass & Digital Clock



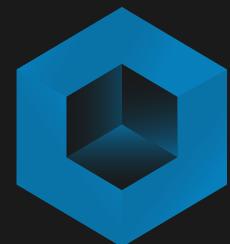
16:00:29

# CLASS DIAGRAM

# SEQUENCE DIAGRAM

# QT LIVE DEMO

Live



# Yocto Section

Developed by Mohamed Magdi



yocto •  
PROJECT



# Layer Structure

*meta-supra*

- SUPRA DISTRO
- SUPRA IMAGE
- RECIPES

# CLASSES DIAGRAM

Layer - Recipes

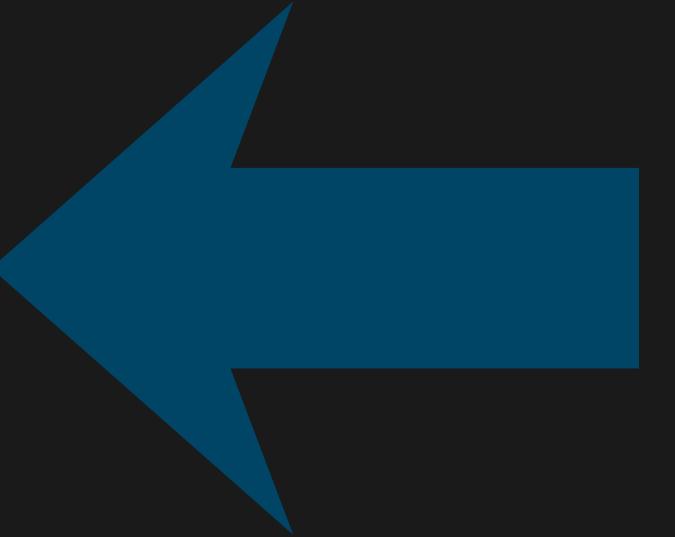
# COMPONENT DIAGRAM

What Image Installs

# **DEPLOYMENT DIAGRAM**

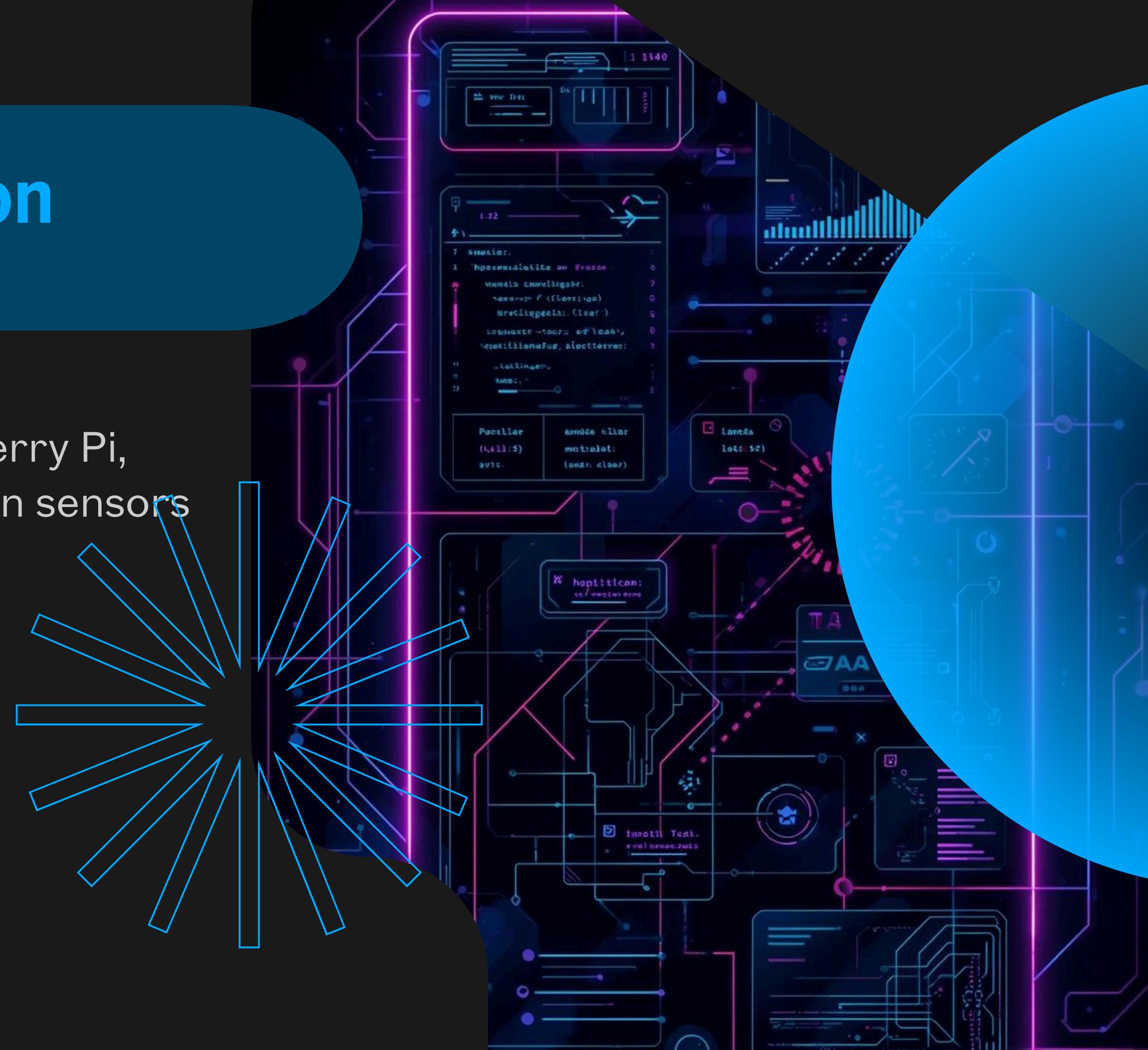
**build → flash → boot (RPi)**

# IPC Today Vs. Future



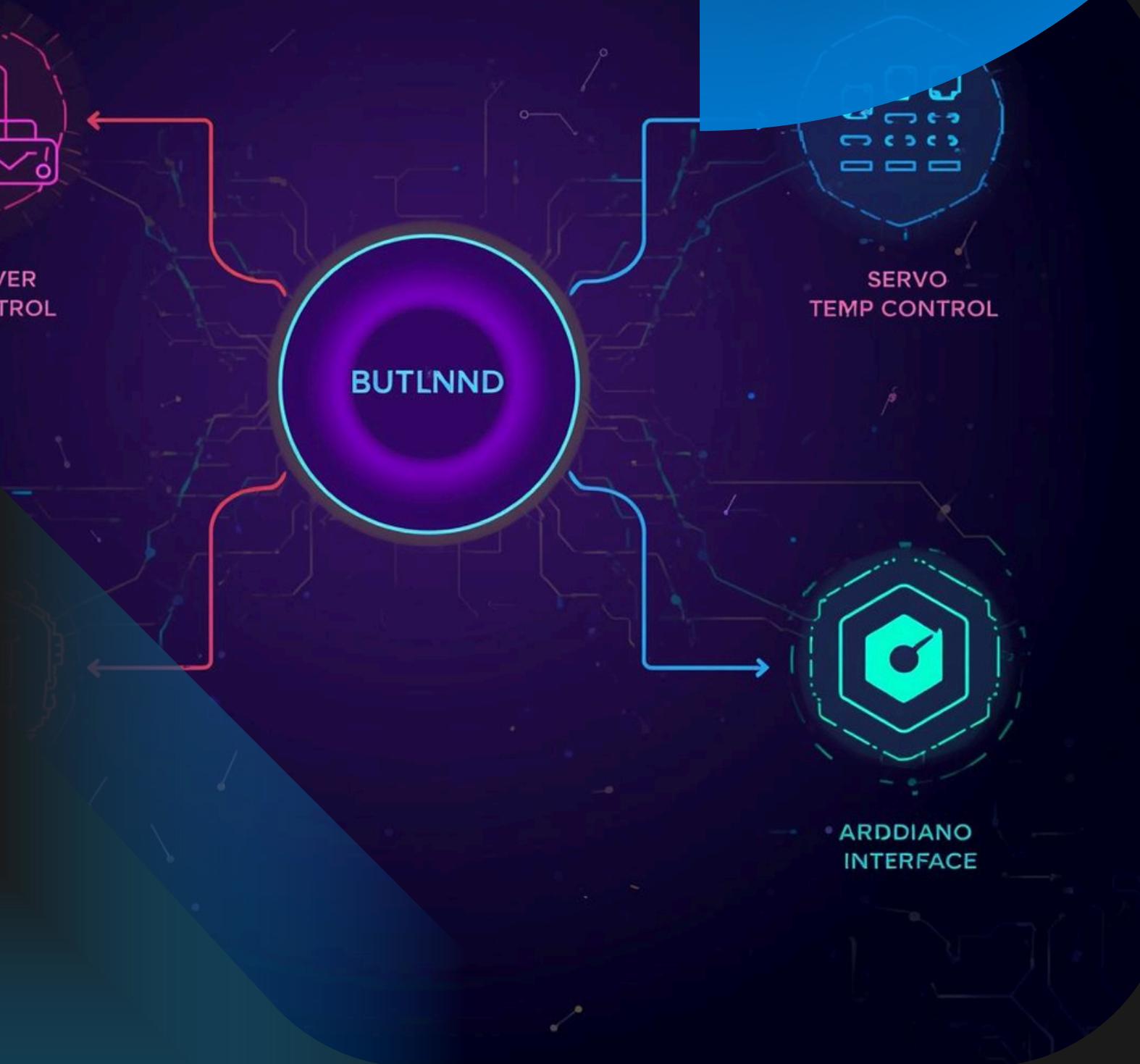
# Backend Application Overview

Implementing custom Linux drivers and backend applications on Raspberry Pi, enabling real-time data flow between sensors and the dashboard interface.



# BACKEND APPLICATION

— ARCHITECTURE —



# Backend Apps

## GPIO CONTROL

Manages Raspberry Pi pins using sysfs to control hardware signals.

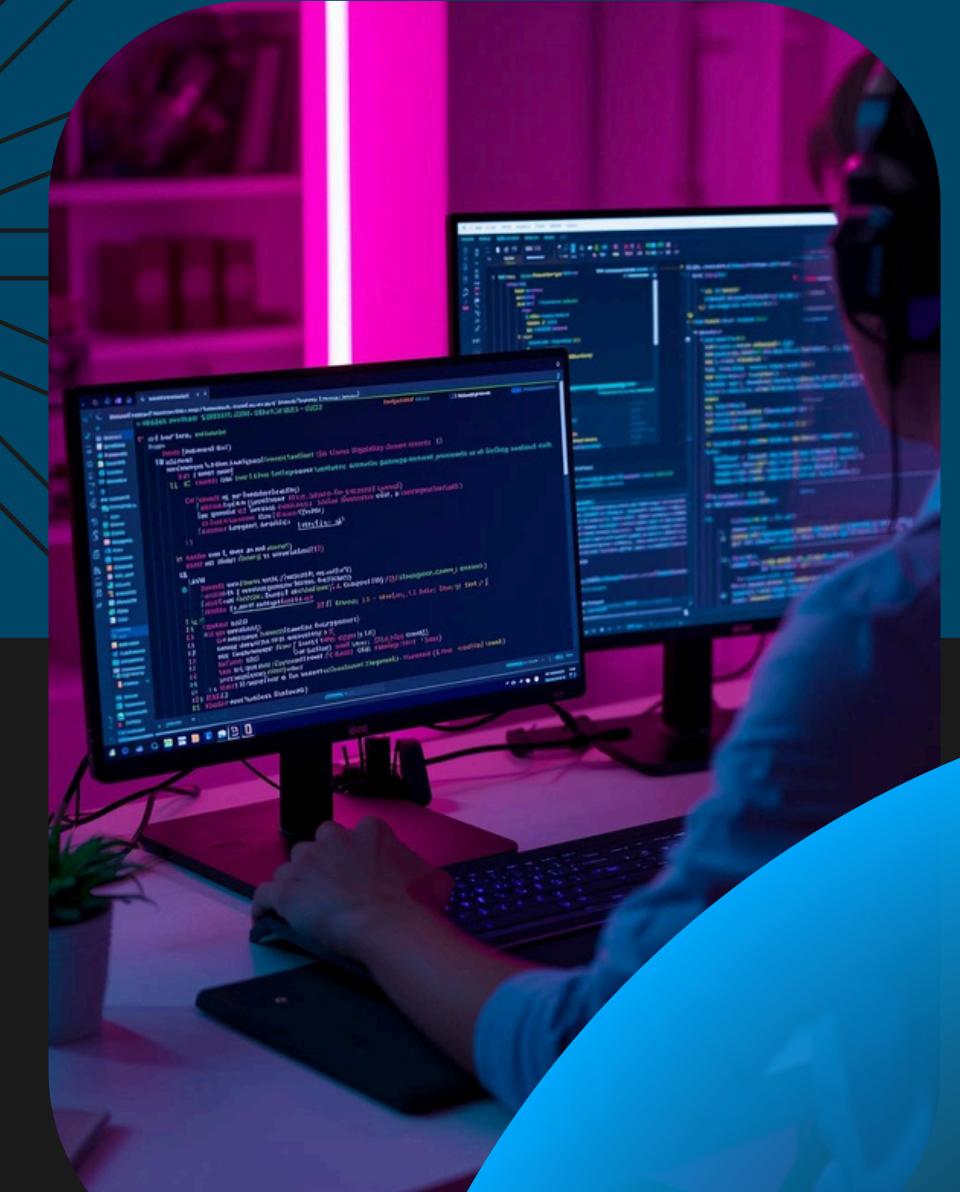
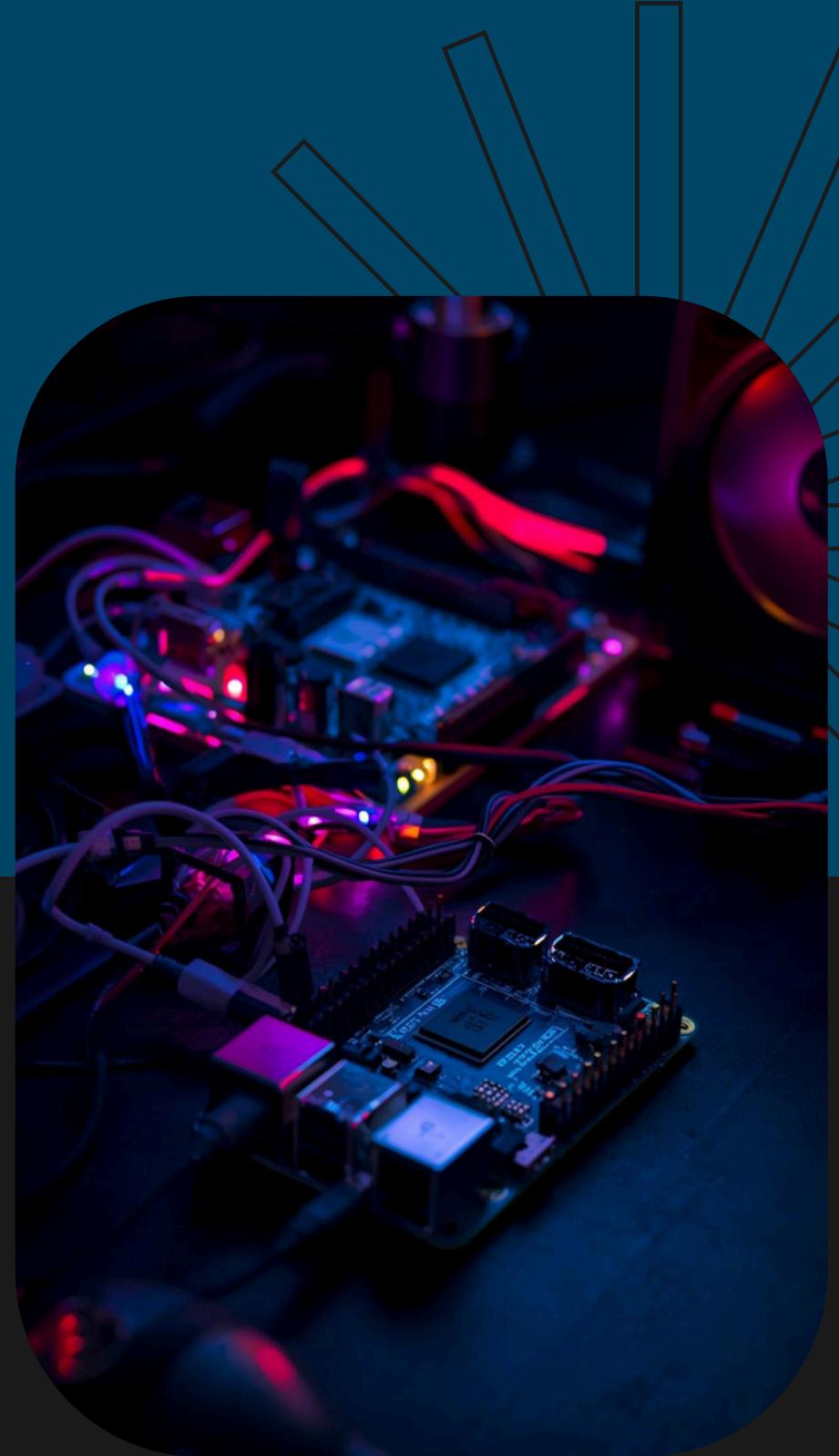
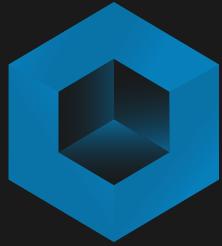
## BUTTON MANAGEMENT

The buttons\_control handles button inputs, logs data, and controls LEDs for user interaction

## SENSOR CONTROL

Reads sensor data and Potentiometer and Maping servo angle based on Pot Value

# Data flow in the Supra Dashboard project



# Project Wrap-up and Roadmap



## Summary of achievements and future direction

- Fully operational Qt dashboard implemented successfully
- Custom Yocto image built for our project
- Live backend applications running seamlessly
- Future enhancements planned for additional features
- Community engagement and feedback encouraged for improvement

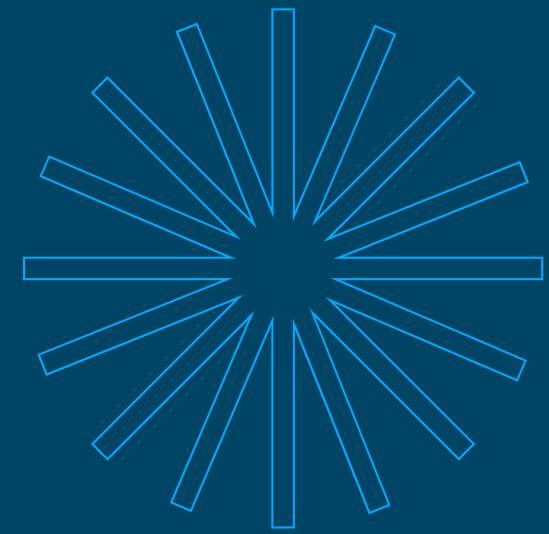


THANK YOU!

**ANY  
QUESTIONS?**



# CONTACT US FOR FEEDBACK



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