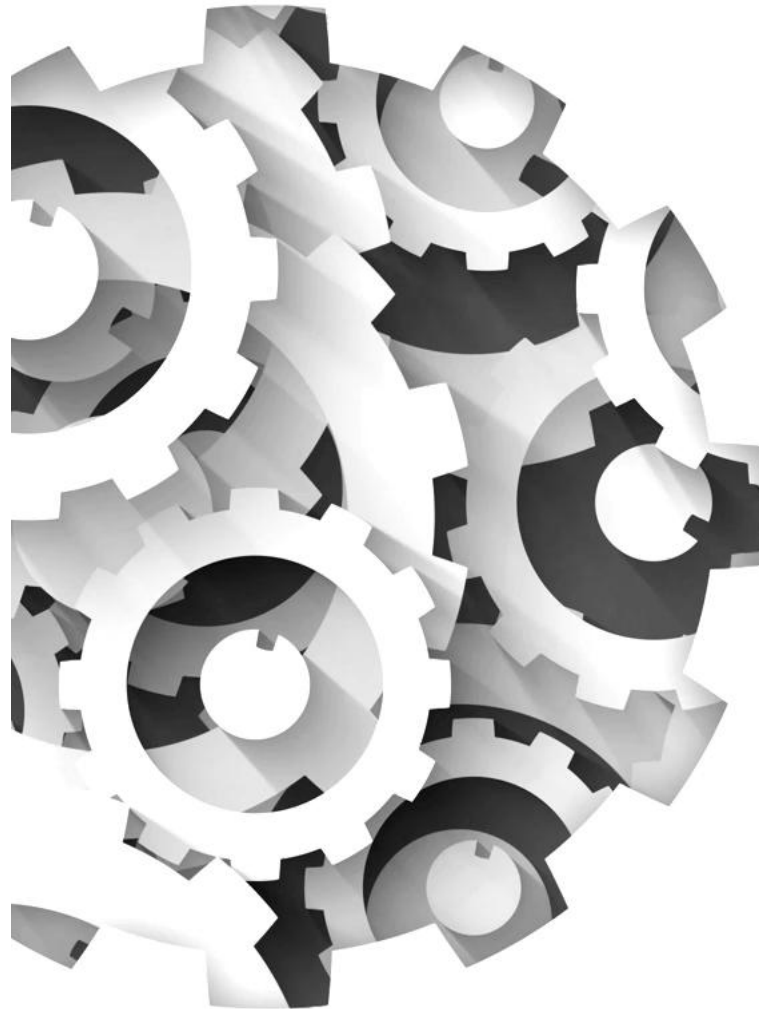# MEC 2025 TEAM AUTOMATION
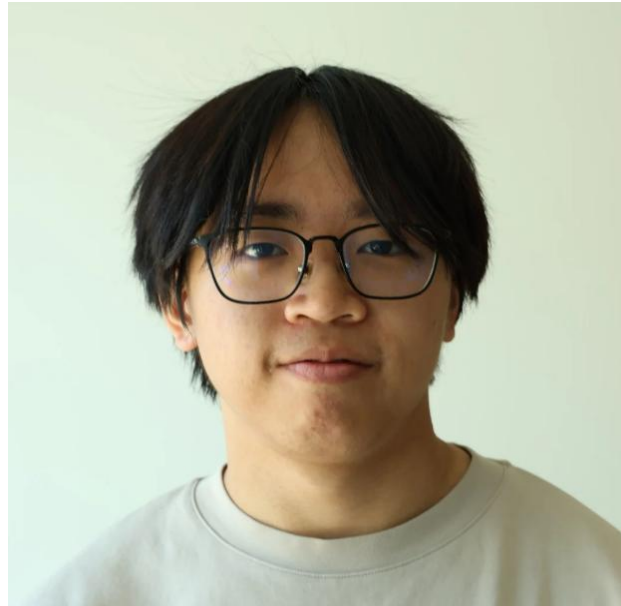
OUR TEAM

Erin Ng
4th Year Automation Engineering
Bachelor of Technology

Calvin Wong
4th Year Automation Engineering
Bachelor of Technology
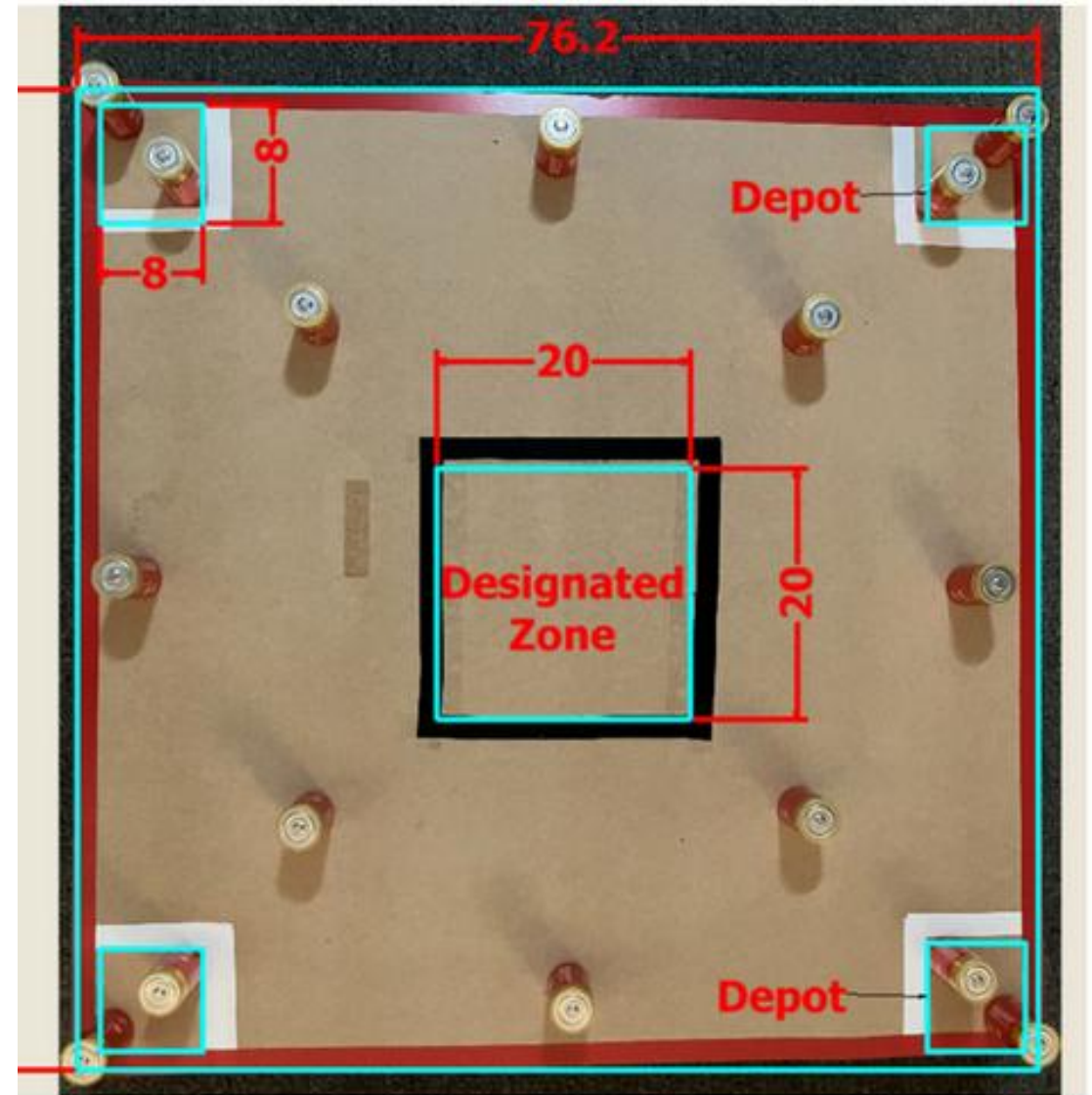

Sajib Osman
4th Year Automation Engineering
Bachelor of Technology
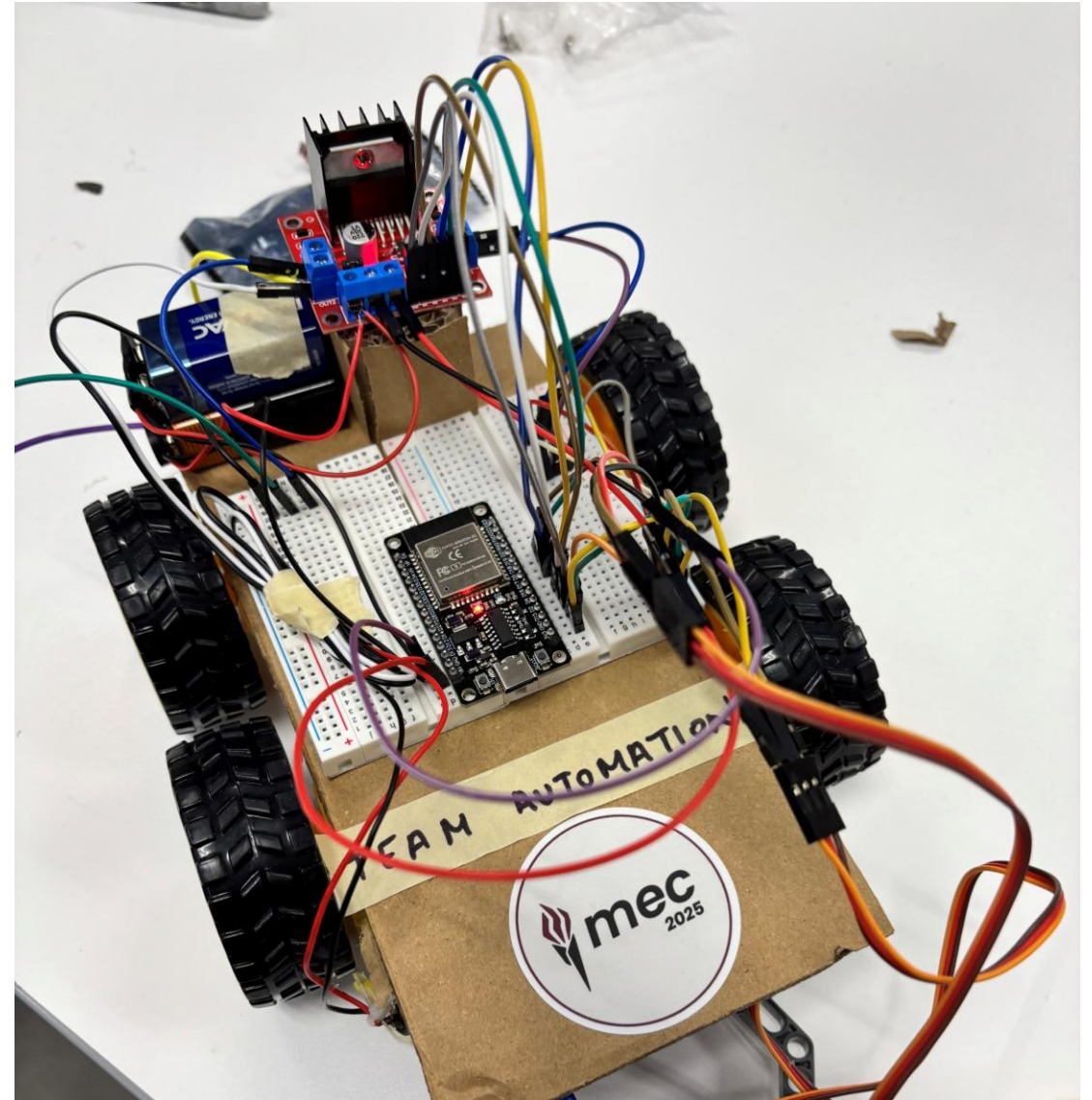
THE PROBLEM

Note: All measurements are in cm

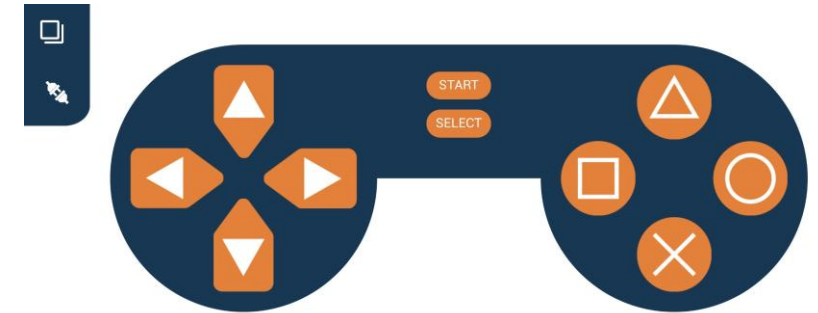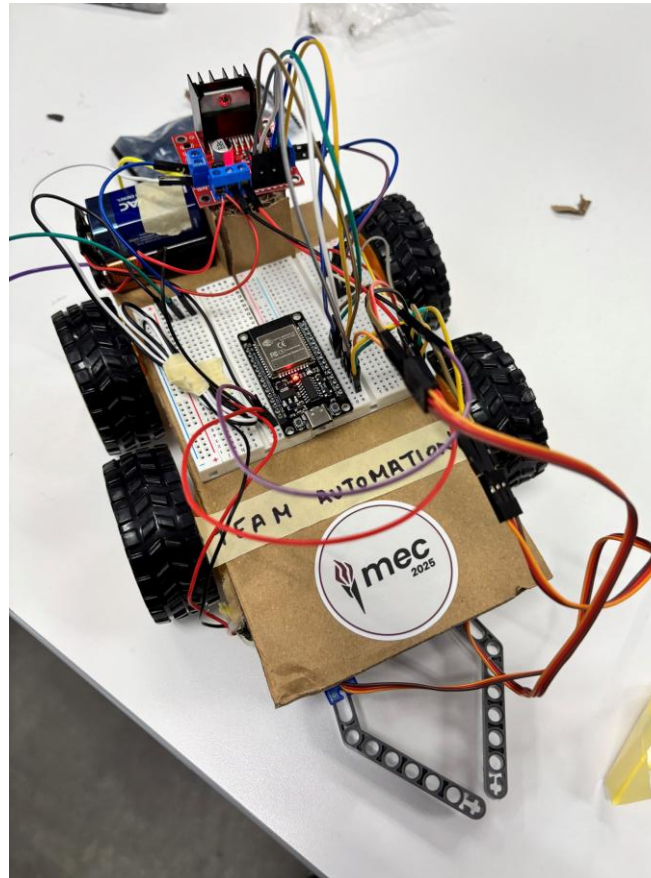Reference: MEC 2025 Competition Package Template - Sr Design.pdf (2025, November 9)
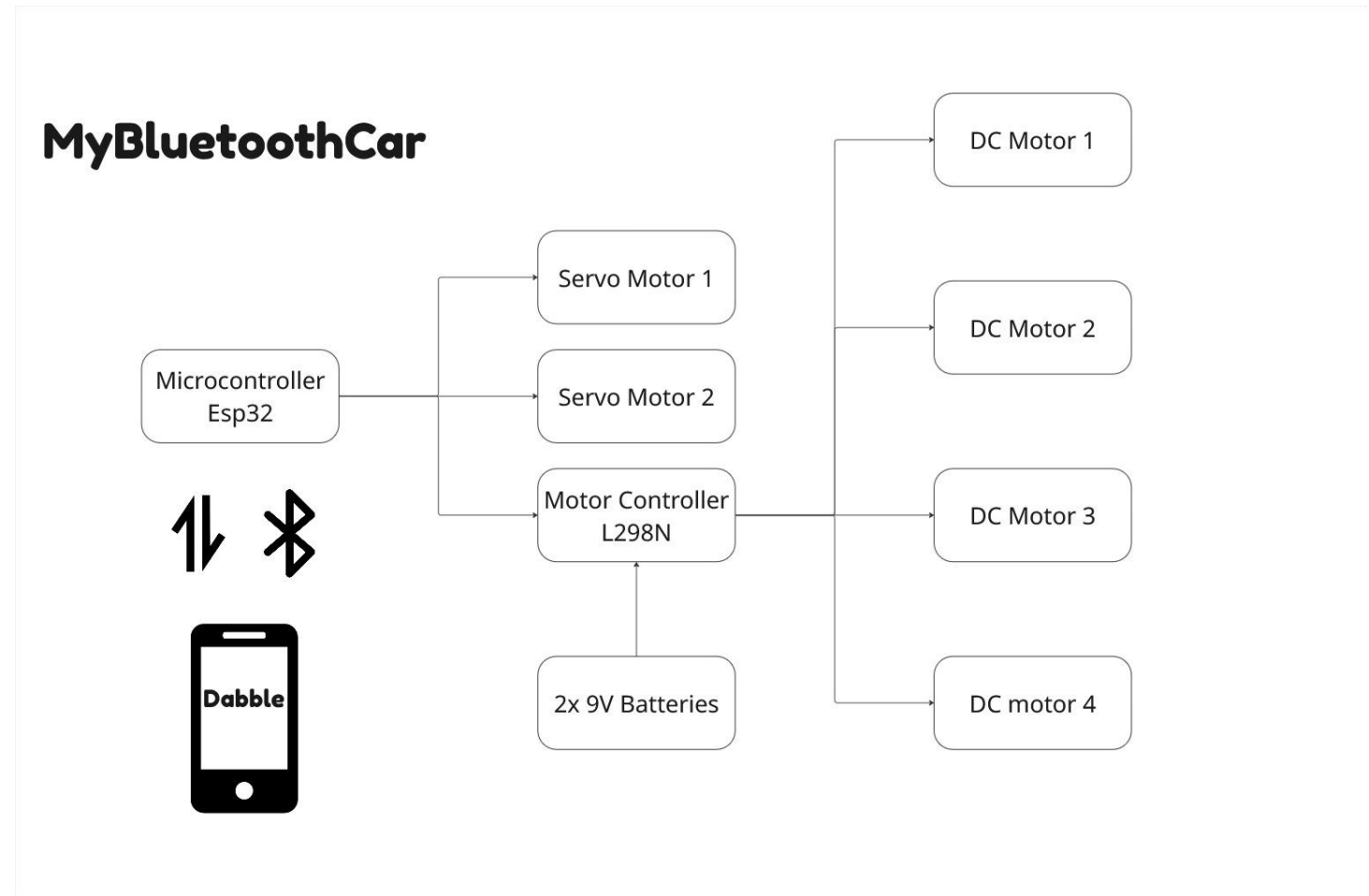
THE SOLUTION

KEY COMPONENTS

- Physical layer
  - 4 DC motors
  - 2 Servo motors
  - 2 9V batteries
  - Motor Controller(L298N)
- Control layer
  - Microcontroller: Esp32
- Communication layer
  - Bluetooth
- User Interaction layer
  - Dabble mobile app
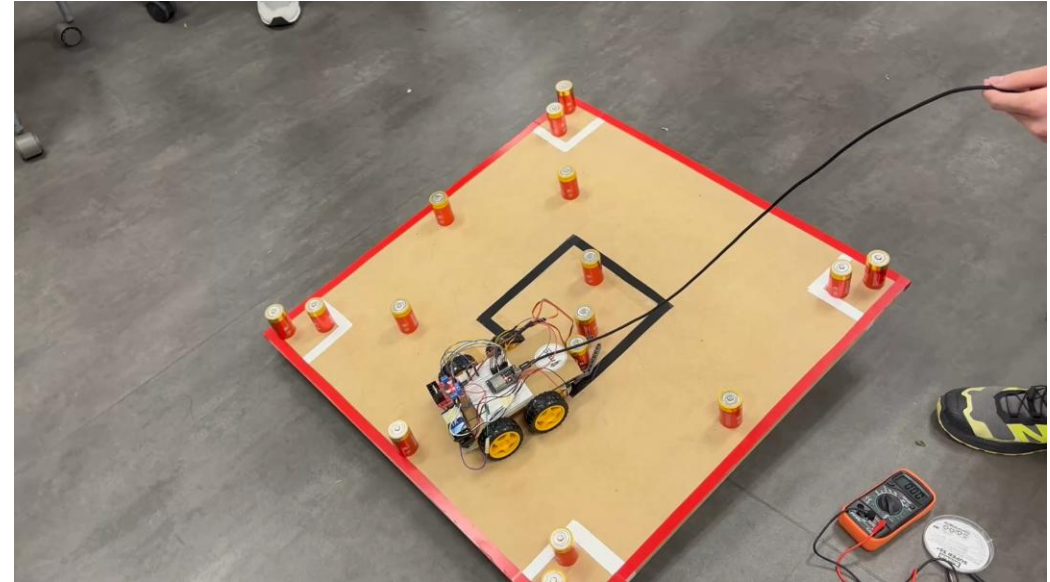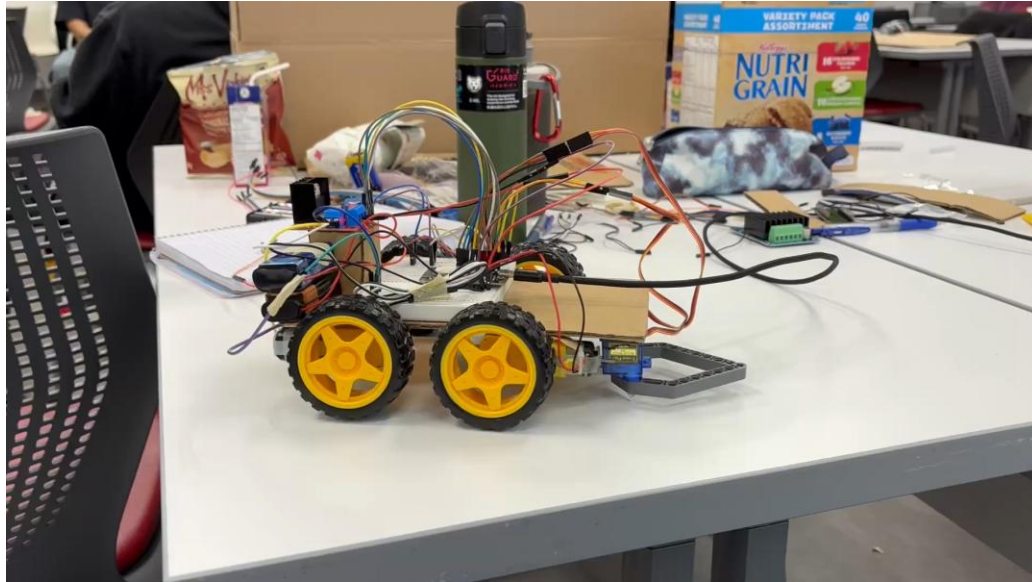
KEY COMPONENTS(CONT.)

- Physical layer
  - 4 DC motors
  - 2 Servo motors
  - 2 9V batteries
  - Motor Controller(L298N)
- Control layer
  - Microcontroller: Esp32
- Communication layer
  - Bluetooth
- User Interaction layer
  - Dabble mobile app

PROTOTYPE OPERATION

STRENGTHS AND WEAKNESSES

- Strengths
  - Highly remote
  - Lightweight
  - User friendly

- Weaknesses
  - Inefficient(can only carry an object at a time)
  - Energy consuming
  - Requires advanced operating skills when it comes to uneven surface

INDUSTRIAL SOLUTION

- Mechanical
  - Using aluminium/composite chassis
  - Weather-sealed frame (IP54–IP67 depending on use)
  - Shock mounted electronics
  - Brushless motors
  - Metal gear servos

- Electrical
  - Custom PCB

- Sensors
  - Ultrasonic/ToF
  - Camera/ LiDAR

- Control and Safety
  - PID motion control
  - RTOS (FreeRTOS, Zephyr)

THANK YOU FOR YOUR ATTENTION

Team Automation