# LAR@MSL – M.E.S. 2024

Robot Overview

Mechanical Schematic

Mechanical schematics play a crucial role in the design and construction of complex systems, including robotics. In the case of a football robot, mechanical schematics are essential to understanding the various components that make up the robot and how they work together.

We start off with a 3-omniWheel Base controlled by the OMNI3MD-Max.
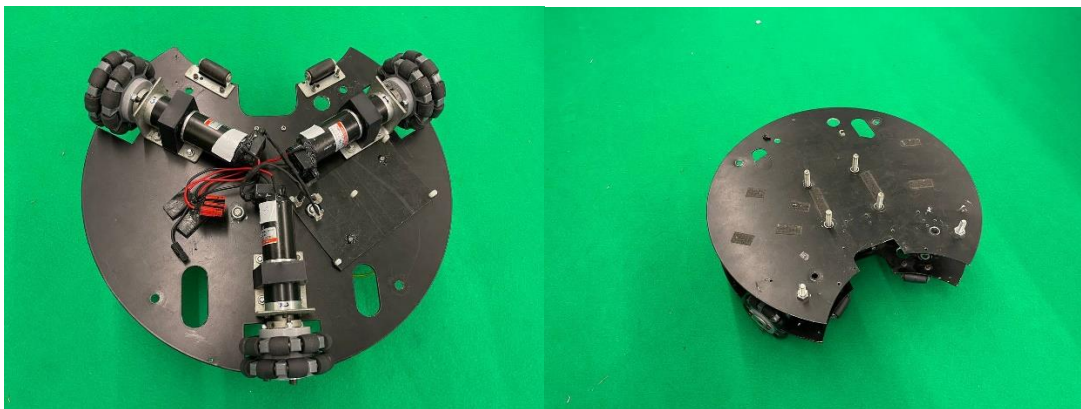
We start to add the Kick components, the kicking mechanism.
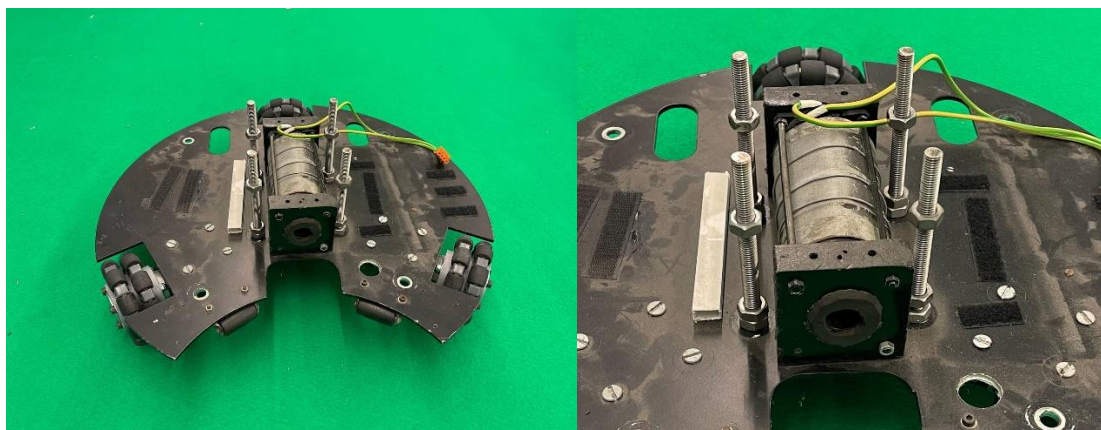
The next part is the support for the computers and its protection. Also here is visible the Main screws to give height where the camera will be attached.
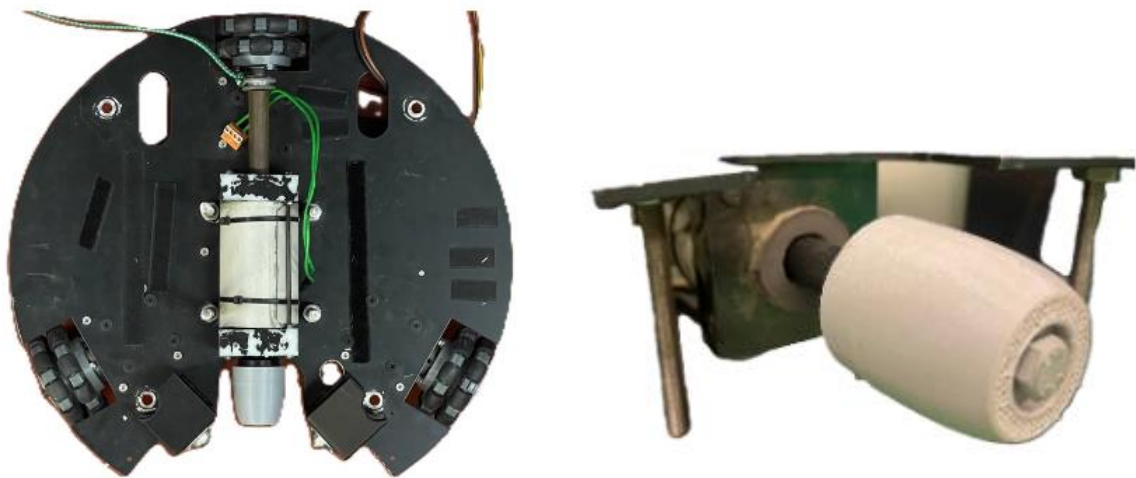
Some new tests using 2 120º FOV cameras are being made with the following head setup and what the cameras see.

Here is visible the dribbler mechanism with its Rollers to help the ball on lateral movements.
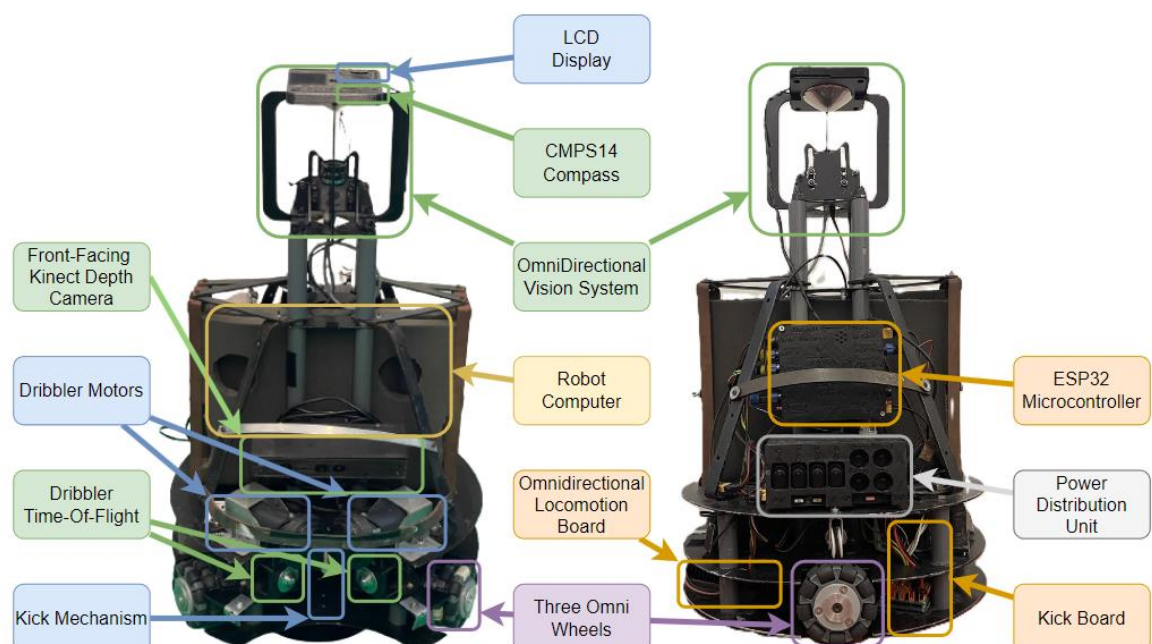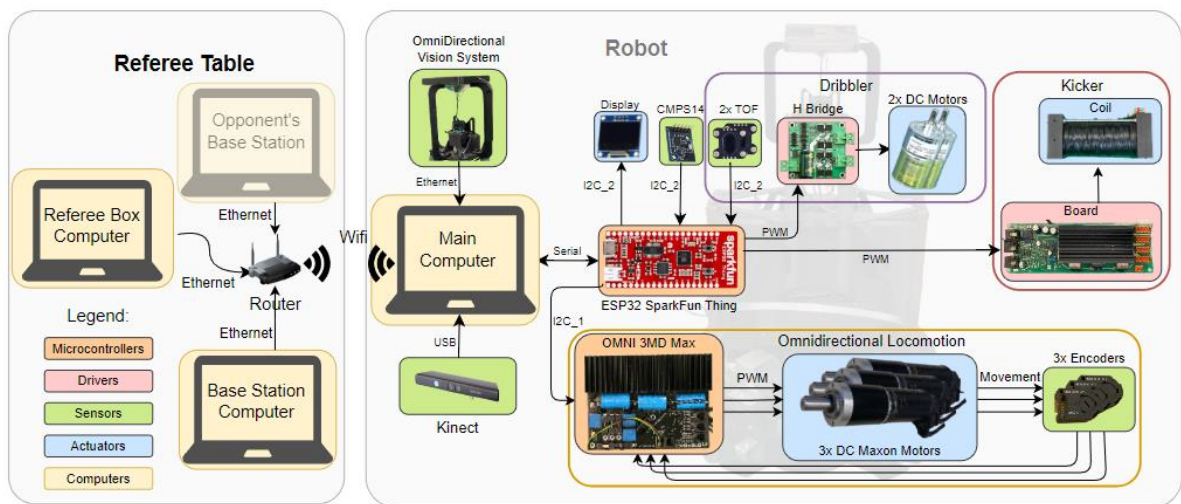

Kicking Mechanism

Electrical Schematic

In addition to the mechanical schematics, the electronic schematics of a football robot are equally crucial to its design and functionality. These schematics serve as a blueprint for the electrical system of the robot.
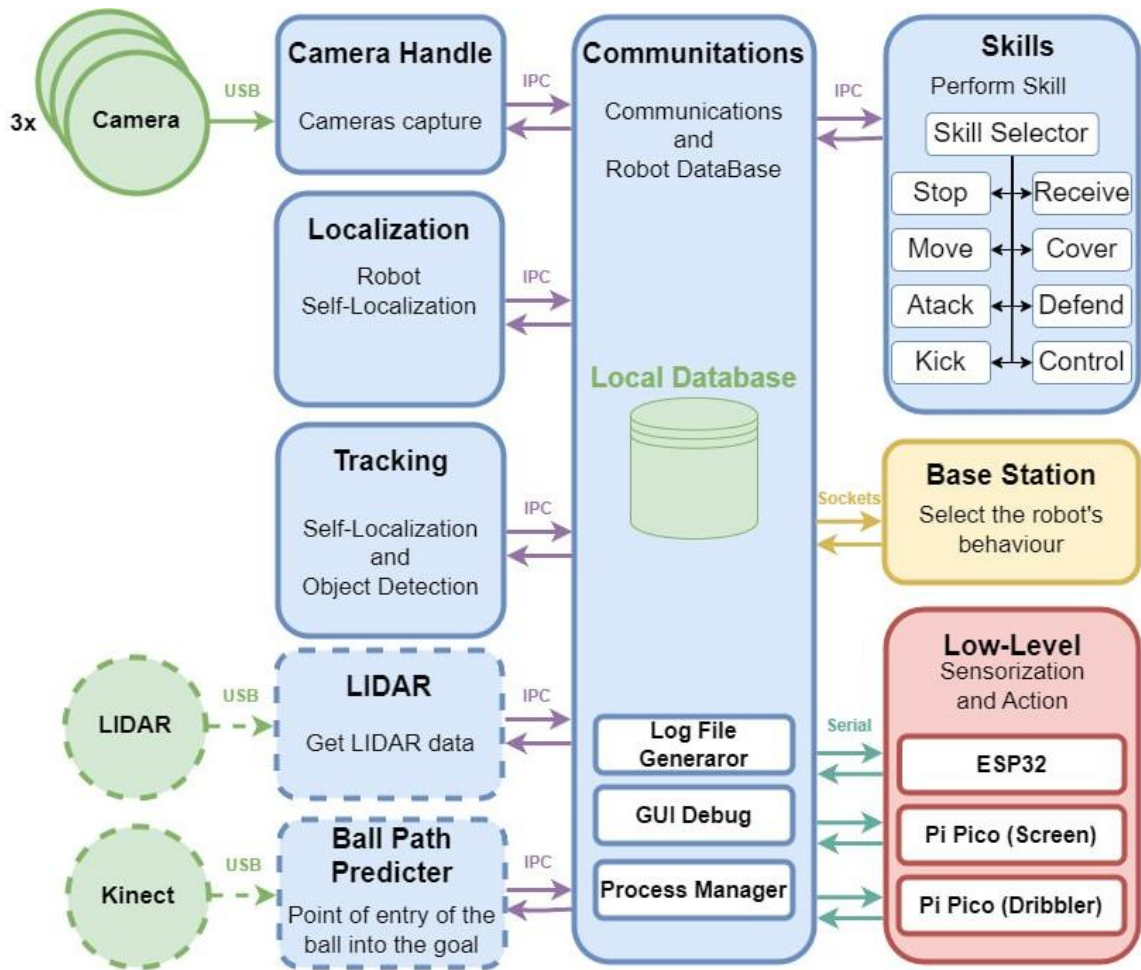
## Lithium-ion 24V Batteries

ESP32 Controller Board

Kicker

Power Box

Battery 1

Fuse 15A — 1200W 20A Step-Down — 20V — Computer

Fuse 4A — XTW-SY-8 — 12V — Relay Module

12V — Camera

Kinect

Battery 2

Fuse 20A — OMNI3D-MAX

Fuse 5A — 70W 6A Step-Up-Down — 12V — Kick Module

300W 15A Step-Down — 14V — Dribblers Module

Relay NC — 5V 3A Step-Down — 5V — PIC (OMNI3D)

5V 5A Step-Down — 5V — LED Strip

Capacitors

R_1

R_2

R_p
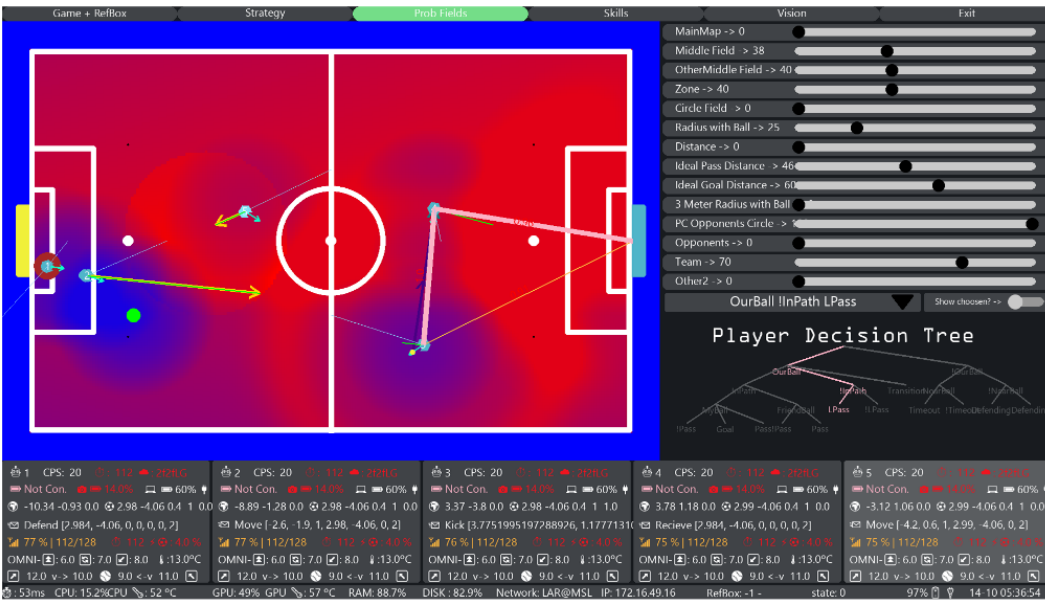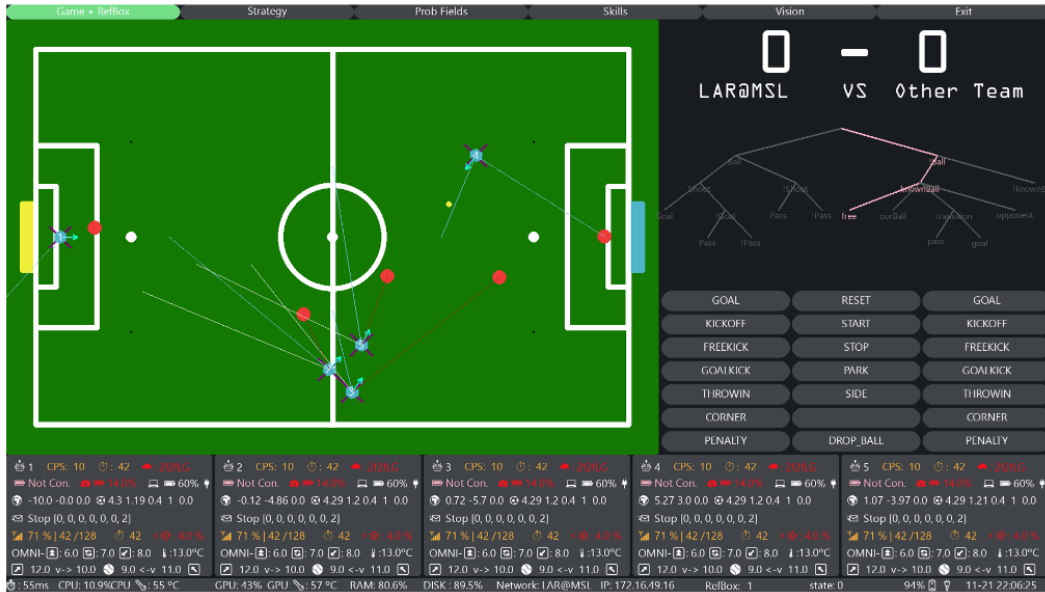
ADC

Software Schematic

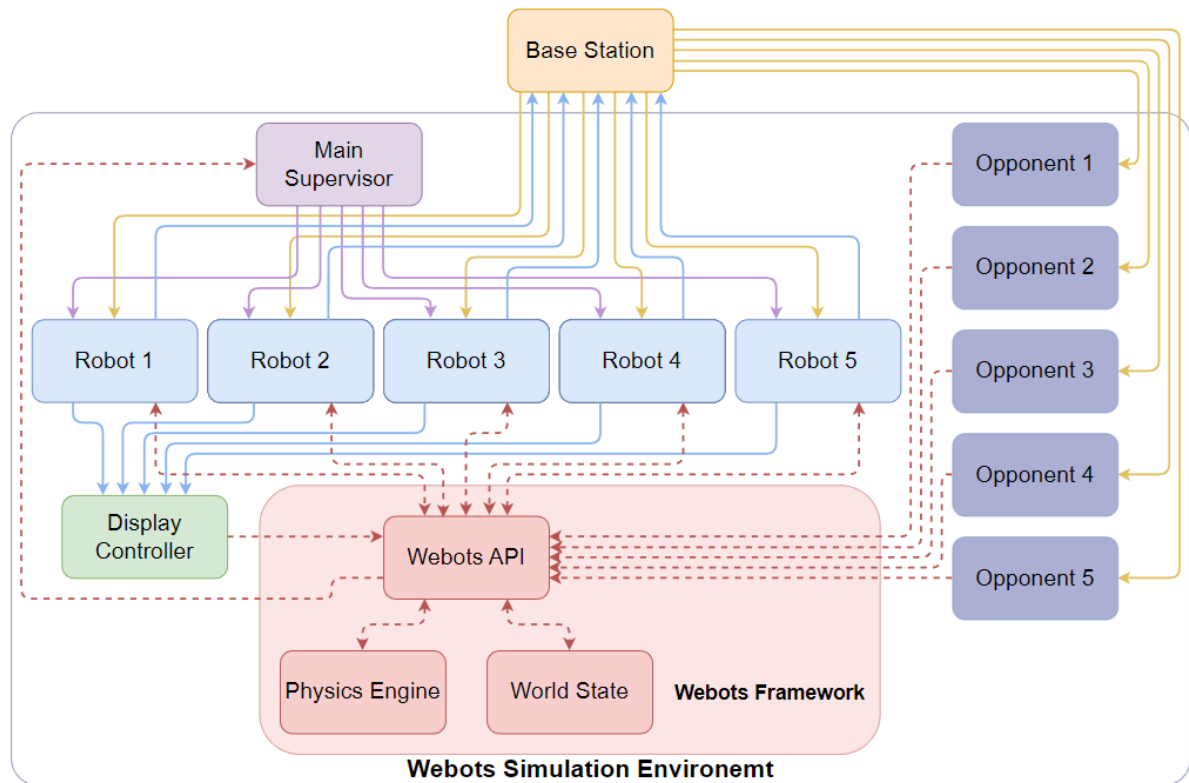Legend: **Robot Computer** **Base Station Computer** **ESP32**

Only on Goalkeeper: ‒ ‒ ‒
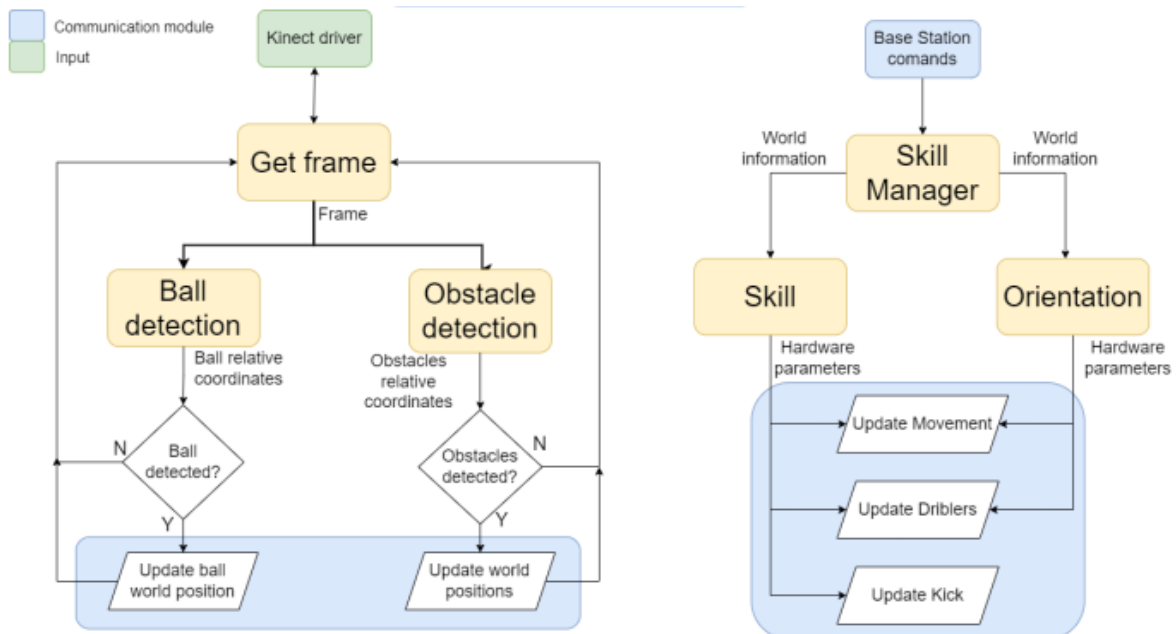
Base Station UI
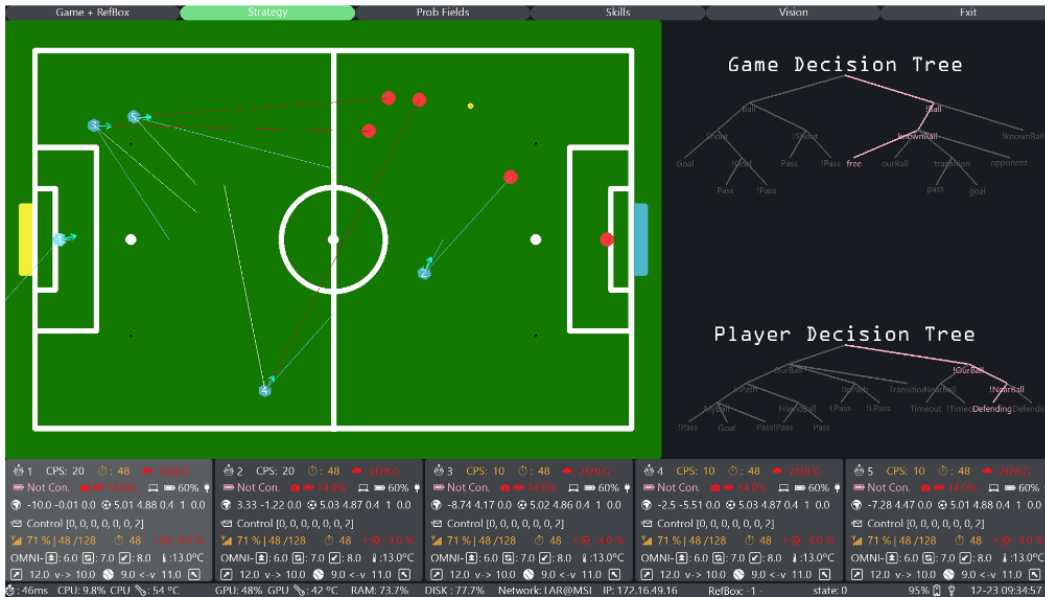
Simulator Architecture

Base Station Architecture