

# Software Survey 2026

## Team name

noon

**Which division(s) are you applying for? If your used software differs between divisions, please fill out the survey once per division.**

Small Size (height < 110 cm, weight < 15 kg)

**Is your software fully or partially OpenSource? If so, where can it be found?**

Our work is fully open source, both software and hardware can be found at:

<https://github.com/team-noon>

**Are you using any software developed by other teams? If so, list every component that you are reusing and the team that originally developed it.**

We do not use any software developed by other teams.

**Are you using any datasets in your research? If you are using your own datasets, are they public?**

We are using our own datasets, they will be released upon completion.

**Please list the scientific publications your team has made since the last application to RoboCup (or if not applicable in the last 2 years).**

Our team is newly-formed, thus we do not have any yet.

**Are there any other contributions you would like to share with the RoboCup community?**

**Which approach are you using to generate the robot walking motion?**

We have a neural network trained with PPO in Webots.

**Which approach are you using to generate other motions of the robot (e.g. kicking, standing up)?**

We currently have (live-adjusted) hard-coded sequences, but we are planning on making the neural network more general purpose (follows target animation while keeping its balance).

**Do you have a kinematic or dynamic model of your robot? If so, how did you create it (e.g. measure physical robot, export from CAD model)?**

We have mockup with dimension and weight estimates to make training quicker, and we are going to fine-tune it with the exact values (and simplified CAD model) once ready.

**What approaches are you using in your robot's visual perception?**

We use a fine-tuned Yolo model via the Onnxruntime library.

**Are you planning with objects in Cartesian or image space? If you are using Cartesian space, how do you transform between the image space and cartesian space?**

Each robot will localize itself on the field, and their opponents relative to them.

They primarily rely on this info, but the goalkeeper does convert them into a global position to use with tactics planning.

**Do you have some form of active vision (i.e. moving the robots camera based on information known about the world)?**

We rotate the camera on each robot to face the ball and we might do quick look-arounds to check on the enemy's positions.

**What approach are you using to localize your robot?**

We use the goals as solid anchors and we measure the position delta from the start using our IMU, cross-referenced with the local estimates from teammate robots.

We are also planning to use the field markings more heavily as well.

**Is your team performing team communication? Which communication protocol are you using?**

We use websockets but we also plan to fully support the game controller.

**What approach are you using for navigation? Are you avoiding obstacles?**

We are experimenting with an A\* based navigation mesh.

### **How is the behavior of your robots structured? (e.g. Behaviour Trees)**

Currently, it is entirely written in Lua, but we are planning on creating a graphical behaviour tree system for future iterations.

### **Are you simulating your robot? If so, which simulator are you using and for what purpose do you use simulations?**

Yes, we have balancing simulated in Webots and we have a separate custom simulation for tactics development.

### **What operating system is running on your robot and which middleware are you using (for example Ubuntu 22.04 and ROS2 Galactic)?**

We have a custom minimal Yocto Linux image running on the robots. The MCUs have bare-metal firmware and the CPU's code is also kept as low-level as practical (for performance, storage and learning purposes).

### **Is there anything else you would like to share that did not fit any previous question?**