

Software Survey 2026

Team name

Team Sweaty

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

Large Size (height < 190 cm, weight < 80 kg)

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

Partially Open Source. We use the Booster T1 a lot of the software is at https://github.com/BoosterRobotics/robocup_demo

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.

No

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

We use very small datasets to train the vision network on balls and robots. The dataset is private

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

T. Granser, S. Glaser, M. Giessler, et al., "Exploration of Neural Network Architectures for Inertia Parameter Identification of a Robotic Arm", Proceedings of the Upper-Rhine Artificial Intelligence Symposium, 2024

S. Hensel, M. Marinov, A. Elabed, "Simulation Environment for the Evaluation of LiDAR Odometry Algorithms", XXXIII International Scientific Conference Electronics (ET), 2024

S. Hensel, M. Marinov, R. Panter, "Design and implementation of a camera-based tracking system for mav using deep learning algorithms", Computation, 2023

M. Gießler, J. Werth, B. Waltersberger, "A wearable sensor and framework for accurate remote monitoring of human motion", Communications Engineering, 2025

M. Gießler, B. Waltersberger, "Robust inverse dynamics by evaluating Newton–Euler equations with respect to a moving reference and measuring angular acceleration", - Autonomous Robots, 2023

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

Not yet.

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

Deep Reinforcement Learning, based on the PPO algorithm

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

Also Deep Reinforcement Learning, in case of standing up the pre-learned motion from Booster Robotics

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)?

Yes, we got the data from Booster, also the simulation for e.g. MuJoCo

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

Deep Learning, currently a YOLOv8 net, but also first tries with YOLOv26.

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?

We currently use image space, but plan to go into Cartesian space. The transformation is done classical, i.e. using a homography designed upon th current robot kinematics.

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

A little. If no ball is detected, we move the head cyclically from left to right.

What approach are you using to localize your robot?

We use the Booster localization from their RoboCup Demo

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

Not so far

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

No, but we want to implement this

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

Behaviour Trees

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

IsaacSim for reinforcement learning, MuJoCo for sim-2-sim

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

Ubuntu 22.04 and ROS2 Humble

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

No.