# Software Survey 2026

**Team name**

NomadZ

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

Middle Size (height < 125 cm, weight < 25 kg)

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

Currently no, we will open source part of the code under https://github.com/nomadz-ethz, we reuse part of our previous SPL code from
https://github.com/nomadz-ethz/nomadz-code-release

**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 are using robocup demo from booster robotics
https://github.com/BoosterRobotics/robocup_demo

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

We plan to use
https://www.kaggle.com/datasets/pietbroemmel/naodevils-segmentation-upper-camera for our research. Data for gaussian splatting are captured from our lab, which is not public avaliable yet.

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

Li, Z., Bjelonic, F., Klemm, V., Hutter, M.: Marladona-towards cooperative team
play using multi-agent reinforcement learning. arXiv preprint arXiv:2409.20326
(2024)
Spinelli, F.A., Ospelt, N., He, C., Palma, E., Montorfani, S., Soloperto, R., Lygeros,
J.: A sampling-based algorithm for multi-agent coordination in robocup soccer. In:

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

We are currently working on training efficient transformer model for the robocup community. We also plan to continue the gaussian splatting work once we obtain the hardware.

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

Reinforcement learning–based locomotion policy trained in simulation

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

we use beyondmimic, reinforcement learning with motion-prior guidance (AMP-style) from motion data.

**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)?**

Provided with booster gym

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

Object detection with Yolo v8

**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?**

Cartesian space, the transformation is done by using camera calibration parameters and ground-plane projection.

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

No

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

visual localization

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

we reuse the communication method from previous SPL code, with UDP broadcast

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

we use behavior-driven, the behavior tree selects target poses and motion goals. Obstacle avoidance is provided by the perception pipeline

**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?**

yes, issac lab

**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?**