Software Survey 2025

Team Name

RoboFEI

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

The software is fully open source. It can be found here:
https://github.com/RoboFEI/

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

We have a kinematics model of the robot, that was adapted from the Darwin OP - we increased the length of the links, and corrected joints when needed. It is mathematical model, done by hand by measuring the robot. We have a CAD model of the robot, but it is not being used.

Are you using Inverse Kinematics? If so what solution (analytic, (pseudo)inverse jabcobian, etc...) are you using?

No. We are not using Inverse Kinematics, and all movements are in open loop.

Are you simulating your robot? If so what are you using simulation for?

Not anymore. We used Webots for many years, but now Webots seems to have crashed, and it is not being updated anymore. So we gave up using it and we are moving to Gazebo.

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

We use a central pattern generator, in open loop.

What approach are you using to generate motions for standing up?

Point by point.

What approach are you using to generate kicking motions?

Point by point.

Do you use any other motions than the previously mentioned? If so, what approaches are you using to generate them?

None

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

We only use images of the balls, from the German dataset.

We also made one dataset, that we merged with other ones. It can be found here: https://ieee-dataport.org/open-access/open-soccer-ball-dataset

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

We are using Yolo-8 to find the balls. Nothing else is computed.

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?

No, we don't do localization and we don't plan...

How is your robot localizing?

Non existent

Is your robot planning a path for navigation? Is it avoiding obstacles? How is the plan executed by the robot (e.g. dynamic window approach)?

Not at the moment. Before covid we had some nice localization using MCL, and path planning. But all that work was lost.

How is the behavior of your robot's structured (e.g. Behavior Trees)? What additional approaches are you using?

The behavior is very basic. we use a state machine to verify in which state the robot is and behave accordingly.

Do you have some form of active vision (i.e. moving the robots

camera based on information known about the world)?

No

Do you apply some form of filtering on the detected objects (e. g. Kalman filter for ball position)?

No

Is your team performing team communication? Are you using the standard RoboCup Humanoid League protocol? If not, why (e.g. it is missing something you need)?

No

Please list contributions your team has made to RoboCup

This is very controversial, but I can state that we were the first team to use NUCs in the robots, in 2014, and we were also the first team to have a full 3D printed robot in 2015. We also made the first full robot made in carbon fiber in 2016. We developed the side kick in 2016 and when grass was introduced, we were the only robots using spikes in the feet at the beginning of the competition. But, as I was told before, this is controversial as none of this can be proved. We don't have this information in the TDPs, and I was told by senior Exec members not to brag about this... So, I am only adding this because you asked, saying that "The responses to the software survey are not detailed enough."

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

None. I don't have Master or PhD students in the team anymore.

Please list the approaches, hardware designs, or code your team is using which were developed by other teams.

Our robots were inspired or based on Robhan robots.

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

Ubuntu and ros2

Is there anything else you would like to share that did not fit to the previous questions?

If you have additional materials you would like to show, please link to them here.