Software Survey 2025

Team Name

RO:BIT

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

Not OpenSoure

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)?

export from Autodesk Inventor

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

we solve robot's legs with inverse kinematics using matlab

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

not simulate

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

we use a mixture of generating pattern strategy and capture point walking

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

we use self-produced program. we generate motions step by step and then each runs continuously.

What approach are you using to generate kicking motions?

The kick motion is also the same as the answer above.

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

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

we use private our datasets

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

We use Ocam to recognize objects and YOLOv11 to turn learning to recognize balls.

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?

After recognizing the object in the image space, we plan the object in the Cartesian space using the camera coordinate transformation method.

How is your robot localizing?

We identify the feature points of the map by spraying particles and then determine the robot's current location by distance calculation.

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)?

We classified the robot as a bounding box with a camera and set it to be recognized as an obstacle to create a master to avoid.

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

We used the master node to divide the case about what actions the robot should perform in each case.

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

Implement active vision through pan control

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

Apply the moving average filter.

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)?

we perform team communication using the standard RoboCup Humanoid protocol.

Please list contributions your team has made to RoboCup

don't have

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

we didn't.

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

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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 to the previous questions?

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

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