Software Survey 2026

Team name

Barelang FC

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?

Partially OpenSource, can be found in https://github.com/barelangfc

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.

Yes, we adopted walk engine from Team UPennalizers

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

Yes we have our own datasets, but it 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).

Publication that related to our humanoid robot research

Hutagalung, D. P., Armadhika, A., Yo, W., Azzahra, S. R., Rezki, Y. L., & Jamzuri, E. R. (2024, December). Implementation and Performance Analysis of a Speech-Based Question Answering System on The Humanoid Robot Barelang 7. In 7th International Conference on Applied Engineering (ICAE 2024) (pp. 179-189). Atlantis Press.

Mawaddah, N. I., Tamba, C. R. A., Hutagalung, D. P., Nainggolan, F. D., Lubis, E. M., & Jamzuri, E. R. (2024, January). Automatic speech recognition for human-robot interaction on the humanoid robot barelang 7. In ICAE 2023: Proceedings of the 6th International Conference on Applied Engineering, ICAE 2023, 7 November 2023, Batam, Riau islands, Indonesia (p. 15). European Alliance for Innovation.

Kurniawan, I., Breygin, N., Diputra, I. J., Erwandi, J. R., & Jamzuri, E. R. (2023, December). Barelang FC: An Adult-Size Humanoid Robot Simulation Model on The ROS and Gazebo. In 2023 3rd International Conference on Smart Cities, Automation & Intelligent Computing Systems (ICON-SONICS) (pp. 189-194). IEEE.
Silitonga, R., Arif, J., Jamzuri, E. R., & Pamungkas, D. S. (2023). Tiny-YOLO distance measurement and object detection coordination system for the BarelangFC robot. International Journal of Electrical & Computer Engineering (2088-8708), 13(6).

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

No

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

We used ZMP analytical controller, adopting the source code from Team UPennalizers at https://github.com/UPenn-RoboCup/UPennalizers

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

We used prerecorded motion for standing-up motion.

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, a kinematics model was implemented for the real robot, but we only used the dynamics model in the URDF simulation model. We used the kinematics and dynamics parameters from the exported CAD model. However, for the weights parameter of each link, we directly measure from the actual robot.

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

We used YOLO for visual perception

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 only used image space without transforming object position to cartesian space.

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

Yes, we have an active vision.

What approach are you using to localize your robot?

Based on odometry and particle filter.

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

Yes, we used ROS2 communication protocol.

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

We used Midas for depth estimation and avoid obstacle based on its predictive depth.

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, for testing developed algorithm

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

ROS2 Foxy

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

No