

Enabling sensing and mobility on wireless testbeds

Mobile node parts

- iRobot Create
- Alix board
- Webcam
- Arduino Uno

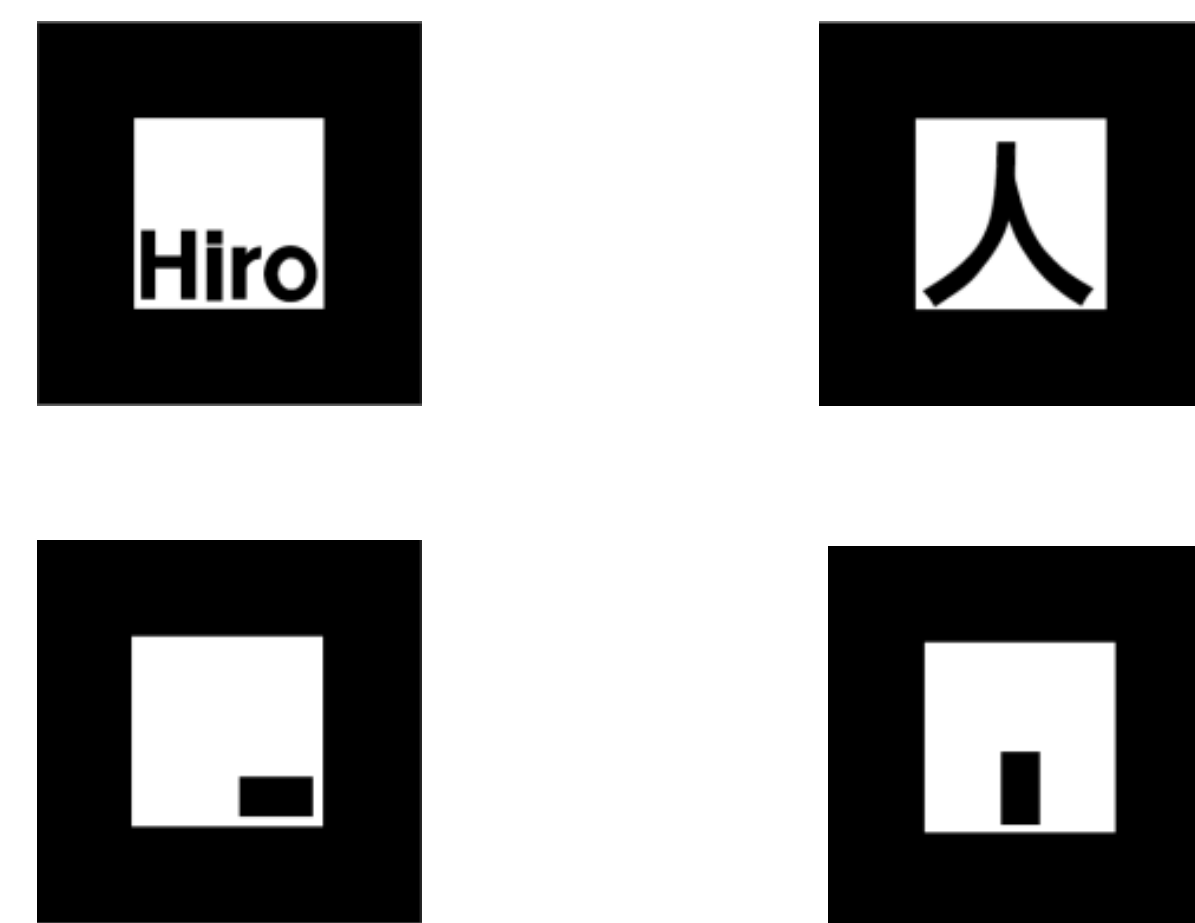


Features

- A custom designed tray made from plexiglas is used, to carry the Alix board
- We use an alix2d2, which is a single board computer, highly power efficient, small and capable of running operating systems
- The Alix board is powered off, by the robot's own battery
- iRobot gives us access to the Create's battery through the 25-pin cargo bay connector
- Position detection is accomplished through image recognition
- 2 wireless network interfaces. The first one for remotely controlling the node, and the second one for experimenting

Pattern recognition

We use a camera, to recognize a number of predefined patterns placed on the ceiling or the floor.



Programming the robot

- Communication over the serial port
- For the robot's movement, we use python scripts based on a python wrapper for the iRobot Create open interface
- We use the ArtoolKit library for image recognition

Demonstration

Through a graphical interface, we are able to observe the node's movement

