

KURA – Robot Specification

Humanoid Soccer Competition KidSize, RoboCup 2024 Eindhoven

Bushra Alshehhi, Ahmad Al Omari, Bushra Alzadjali, Naseeba Rehman, Hamad Karki

Khalifa University, UAE
kurauae@gmail.com

1 Robot Specification



Robot name: KURA (based on Rhoban Sigmaban kinematics)

Height: 65 cm

Weight: 6.8 kg

Walking speed: 20 cm/s

Motors: 20 DOF

- **Neck:** Dynamixel MX-64 (2 motors)
- **Upper Body:** Dynamixel MX-64 (2 per arm) and Dynamixel MX-106 (1 per arm)
- **Lower Body:** Dynamixel MX-106 (6 per leg)

Sensors:

- **Camera:** 2 FLIR Blackfly S GigE (Stereo vision), Beward BL0220M23 135 FoV lens
- **IMU:** GY-88 (magnetometer is not in use)
- **Foot Pressure:** 4 strain Gauge Sensors per foot, ADC AD7124-4BCPZ

Computing units:

- **Low-level:** ARM7 (stm32) 72MHz (Maple mini) (Rhoban DXL Board)
- **High-level:** Intel NUC
 - Intel Core i7 gen10
 - 8GB RAM
 - SSD 256GB
 - UGreen USB3.0-Ethernet adapter (second camera)

Operating System: Linux (Ubuntu 18.04 Bionic)

Battery: LiPo 3300 mAh, 14.8V

Materials: Carbon fiber plates (all plain parts), milled aluminum (other body parts), PETG (head, handle, hands, feet cover, spikes, uniform), Nylon (front/back dampers)

Other specs: reinforced hip, shoulder and neck joints with needle bearings, front/back nylon dampers, PETG/TPU two-component spikes, 3D-printed red/blue soccer uniform.

