ARMAR 6

ARMAR-6 is a collaborative humanoid robot assistant for industrial environments. Designed to recognize the need of help and to allow for an easy and safe human-robot interaction, the robot's comprehensive sensor setup includes various camera systems, torque sensors and systems for speech recognition. The dual arm system combines human-like kinematics with a payload of 10 kg which allows for dexterous and high-performant dual arm manipulation. In combination with its telescopic torso joint and a pair of underactuated five-finger hands, ARMAR-6 is able to grasp objects on the floor as well as to work in a height of 240 cm. The mobile platform includes holonomic wheels, battery packs and four high-end PCs for autonomous on-board data processing.The software architecture is implemented in ArmarX (https://armarx.humanoids.kit.edu). High-level functionality, like object localization, navigation, grasping and planning are already implemented and available.

TERRINet

Key Features

- Holonomic movement of the mobile platform
- Various control modes enable the execution of precise and torque/force-controlled motions
- Dexterous arm system with 2×8 DoF for dual arm manipulation
- Limitless rotation in shoulder, upper arm and forearm
- Control architecture with memory and attention system
- Underactuated five-finger hands

Possible Applications

- AI: symbolic planning and execution monitoring
- Cognitive robotics: learning multimodal representations, affordances
- Physical human-robot interaction
- Semantic scene understanding and affordance extraction
- Task space impedance control
- Gravity compensated torque control
- Dual arm manipulation
- Force and torque based control and interaction
- Natural speech dialog
- Human-robot interaction
- Vision-based grasping and deep learning for grasping
- Imitation Learning, Programming by demonstration

Access information

Corresponding infrastructure	Karlsruhe Institute of Technology Institute of Anthropomatics and Robotics - High Performance Humanoid Technologies Lab (IAR H2T)
Location	Adenauerring 2, 76131 Karlsruhe, Germany
Unit of access	Working day

Technical specifications

Arm range	130 cm
Total Weight	160 kg (without battery packs)
Arm span width	310 cm
Payload (single arm)	10 kg (long range), 14 kg (mid range)
Computers	4 high-end PCs, 1 GPU
Robotic Framework	ArmarX (previous framework MCA)
Total Height	192 cm
Software	ArmarX (https://www.armarx.humanoids.kit.edu)
Working height	0 – 240 cm
Platform speed	1 m/s
Bus system	CAN-Bus (CANopen)
DoF	27

Additional information

ArmarX: https://armarx.humanoids.kit.edu

Additional Information: Available here and here.