

# Tech United Eindhoven

RoboCup European Open, Eindhoven, Netherlands



## AMIGO & SERGIO

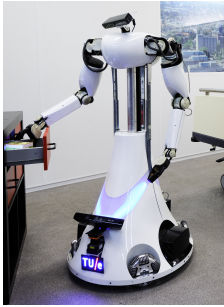


Figure 1: AMIGO

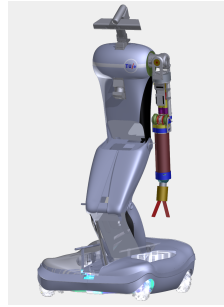
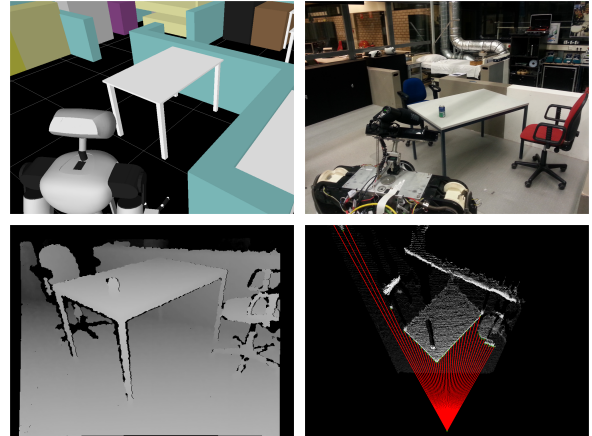


Figure 2: SERGIO

- AMIGO
  - Omni-wheels, 1 DoF torso
- SERGIO
  - Suspended mecanum wheels, 2 DoF torso
- 7-DoF manipulators
- Designs available at Robotic Open Platform

## Furniture fitting



- Updating the pose of furniture objects in the world model
  - Navigation map and locations are updated
  - Object segmentation is robustified
- Efficient fitting by projecting the 3D point cloud to a 1D range array

## World modeling

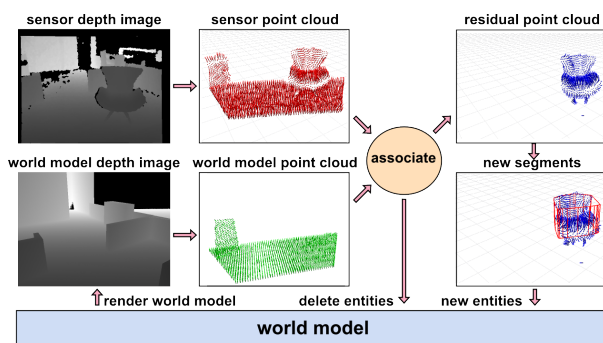
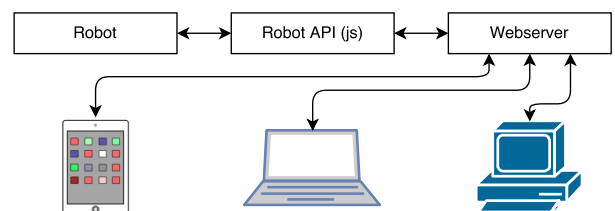


Figure 3: Overview of ED: Environment Descriptor

- A central object-oriented, volumetric world model, used for:
  - Navigation
  - Object tracking
  - Localization
- Objects have 3D shape, pose, type
- Updating by comparing rendered world model with depth image

## WebGUI



- Web-based Graphical User Interface
- Cross-platform
- Action server schedules the robot's tasks based on user input

## Natural language interpretation

- Natural Language Interpretation using Feature Context Free Grammar
- Speech recognition grammars are deduced from the NLI grammars