

Tech United Eindhoven

RoboCup German Open 2017



VANDERLANDE



SKM RapidModelling BV

AMIGO & SERGIO

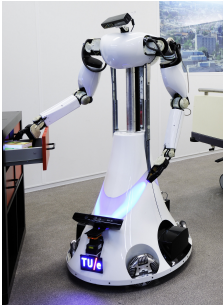


Figure 1: AMIGO50.0pt

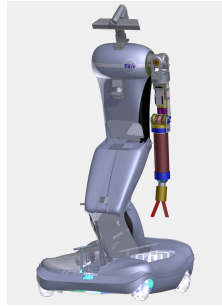
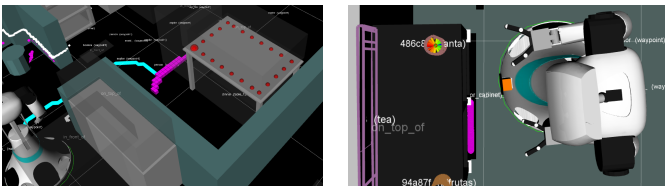


Figure 2: SERGIO

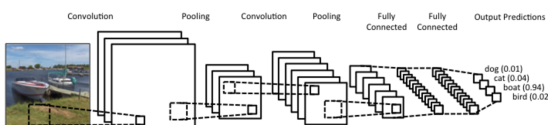
- AMIGO
 - Omni-wheels, 1 DoF torso
- SERGIO
 - Suspended mecanum wheels, 2 DoF torso
- 7-DoF manipulators
- Designs available at Robotic Open Platform

Improved manipulation



- Empty spot designer
 - Incorporating current position
- Grasping point determination

Image recognition



- Object recognition using Deep Learning
- Face recognition: Openface based on Torch
- ROS-packages: ros-kinetic-image-recognition
 - Including training and test GUIs

World modeling

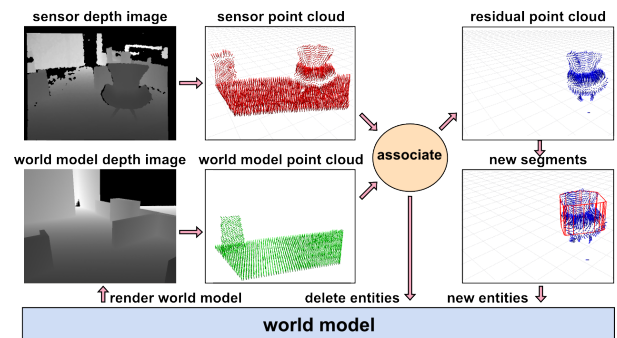
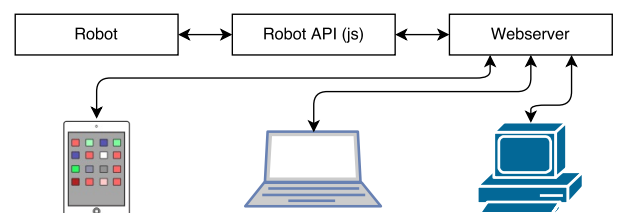


Figure 3: Overview of ED: Environment Descriptor

- A central object-oriented, volumetric world model, used for:
 - Navigation, localization
 - Object tracking
- Objects have 3D shape, pose, type
- Updating by comparing rendered world model with depth image
- Furniture fitting
 - Increases performance of navigation, localisation and object segmentation

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