Tech United Eindhoven
RoboCup German Open 2017

VANDERLANDE
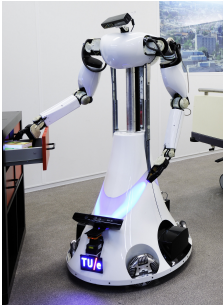
SKM RapidModelling BV

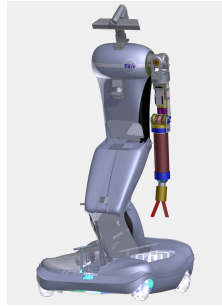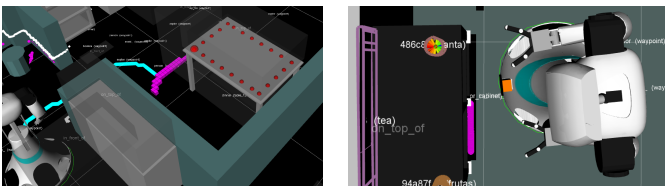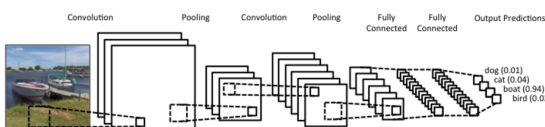## AMIGO & SERGIO

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

Improved manipulation

- Empty spot designator
  - 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
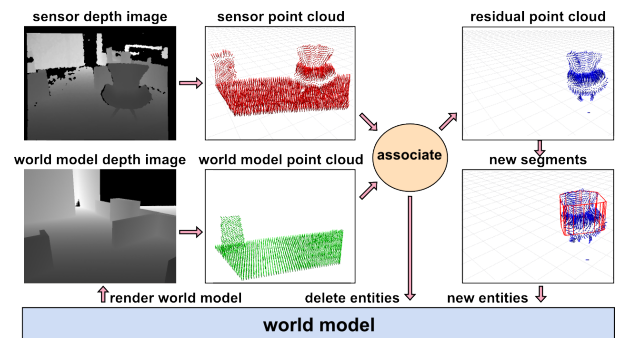
World modeling

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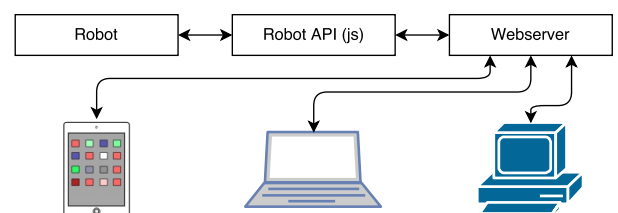
- Web-based Graphical User Interface
- Cross-platform
- Action server schedules the robot's tasks based on user input

Natural language interpretation

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