

# Human-centered, Highly Interactive Mobile Service Robots - Research Expertise and Interests

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### How we want to participate in EU-IST call 6:

➔ Joining a STREP proposal as participant ➔ integration of our research expertise in robotics and Human-Robot-Interaction (HRI)

**OR / AND**

➔ Looking for partners for a STREP proposal in the robotic home assistant domain

# Own Expertise in HRI and Robotics

Multi-modal **interaction** between semi-autonomous mobile robots and human users

Robust **navigation** of mobile robots in complex real-world environments by means of low-cost sensors

Multi-modal user detection and tracking  
 Vision-based identification of **user instructions**

Recognition of authorized users



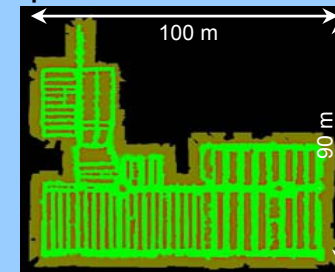
Estimation of user's head and eye gaze  
 Detection of user's pointing poses  
 Identification of command gestures

Vision-based recognition of **current user state**

Age & gender  
 Gaze direction  
 Facial expression  
 Body language



On-line map building of large, complex environments



Multi-modal probabilistic self-localization



Vision-based navigation and obstacle avoidance



→ e.g. for mobile shopping assistants

# Our Interest: Robotic Assistants for Domestic Environments

**Objective:** Development of **advanced robotics technologies** for a mobile robotic home assistant, a working demonstrator of a highly interactive and user-adaptive social robot assisting alone living and aid-needing people in their domestic environment

- to allow them to lead an autonomous life for as long as possible
- to enable them to manage their environment as independently as possible by augmenting their abilities

## Main aspects:

- multimodal interaction and observation
- advanced navigation in un-engineered domestic environments
- consistent integration of communication and service capabilities

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Our interactive platform SCITOS