Title: Voice-controlled object recognition to move arms of ROSWITHA

Project Type: Project in ISA & AIS

Assigned Students: Group No. ARM-4

Schenkel, Nico - 1366866

<nico.schenkel@stud.fra-uas.de>

Hellriegel, Lars – 1359307

<lars.hellriegel@stud.fra-uas.de>

Start and End Date:

Research Problem/ Hypothesis/ Motivation (Why do I want to do what I will do?)

- Human-Robot interaction to facilitate the life of humans in non-industrial environments (e.g. kitchen).
    - Implement ROSWITHA's behavior, which supports humans in the kitchen environment.

Goal/ Objective (What do I want to achieve?)

- The Robot – ROWITHA- should be able to understand a command, which leads to detecting an object (Kitchen utensils and humans) in the room. Additionally, the arms move towards the object.

Methodology (How do I want to achieve it?)

- Voice Recognition
    - Creating a Dataset with commands
    - Using existing Model and train it with Data
- Object Detection (Computer Vision):
    - Collecting Data of objects which should be detected
    - Use (and train) computer vision model
    - The Use of a stereo camera allows to get the coordinates of the object
- Robot arm movement:
    - Based on recognized voice commands and coordinates of detected objects
    - Use of inverse kinematics

Deliverables (How will I deliver my results?)

- Report
- Video

References (if already available)

[1] ....

Remark: Apply the KICS (Keep It Clear and Structured) principle. Use facts and metrics as well as clearly formulated, specific, logically ordered and consistent statements.