Human-Robot Interaction

User Study Planning

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Brief 1: Research Question

- **Goal:** Define the research question for your HRI user study and develop the user study plan

- **Research question**
  - Question that should be tested in the user study
  - Similar to the questions we had in the mini user study last week
- **Session task (30 minutes)**
  - Define a research questions with your group
  - Define hypotheses for your question
  - Use brainstorming techniques if necessary
  - Each group has 3 minutes to present their research question

Example research question

"Do humans perceive a robot that speaks faster as more intelligent"

Example hypothesis:

- Speaking fast is often observed in highly intelligent people, therefore a fast speaking robot should also be perceived as more intelligent.
- The robot is using a speech synthesis program therefore it will be harder to understand it when it speaks faster.

Brief 2: Methodology

- **Goal:** Define the task that you will be using to test your research question

- **Task description**
  - Defines the actions for robot and human that will be observed in the user study
  - Task needs to be designed to answer research question
- **Session task (30 minutes)**
  - Define a task that robot and human will do together in your study
  - Task should be implementable on NAO robot
  - Think about the independent variables / experiment conditions for the task

Example task
- Robot gives human a short spoken tutorial about how to assemble a LEGO set
- Human assembles the LEGO set
- Robot uses two different speaking speeds when giving the instructions

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Brief 3: Measurements

- **Goal:** Define the measurements (dependent variables) that will be collected during the user study
- **Subjective measurements**
  - Questionnaires
  - Interviews
- **Objective measurements**
  - Task success
  - Task completion time
- **Session task (30 minutes)**
  - Investigate the questionnaires on the next slides, what do they measure?
  - Define the measurements you want to use in your study

Example measurements
- Subjective
  - Perceived intelligence scale of Godspeed questionnaire series
  - System Usability Scale
- Objective
  - Time taken to build the LEGO set
  - Task success: How many LEGO sets have been built? Have they been built correctly?

Questionnaires

- Godspeed Questionnaire
  http://www.bartneck.de/2008/03/11/the-godspeed-questionnaire-series/

- System Usability Scale
  https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html

- NASA Task Load Index
  https://humansystems.arc.nasa.gov/groups/TLX/

- Negative Attitude Towards Robots Scale
  https://uhra.herts.ac.uk/handle/2299/9641

Assignment

- Prepare a user study description that contains at least the following parts:
  - Research question and hypothesis
    (explain background of question)
  - Interaction task for robot and human
    describe the robot behaviour to be tested as accurate as possible
  - Measurements
    Any subjective and objective measurements you plan to collect
  - Expected results
    A short discussion of study results you are expecting to get
- Document should be 2-3 pages long
- PDF File name: user-study-plan-group-*<your group number>*.pdf
- Upload the PDF to Blackboard

Deadline: Thursday 21.02.2019, 17:00