Social Robotics

Albert-Ludwigs-Universität Freiburg

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Barbara Kuhnert, Laura Wächter

WS 2017/18

Lecturers

Prof. Dr. Bernhard Nebel Room 52-00-028

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Brief CV

- 2002-2009: Student of Computer Science at University of Hamburg
- 2009: Diploma Thesis on robots using natural-language route instructions for navigation.
- 2009-2015: Research Assistant at University of Hamburg
- 2015: Dissertation on robot social navigation
- Since 2015: Lecturer at University of Freiburg
  - Research Interest: Robot Companions, Machine Ethics (`http://www.hera-project.com/`)

Teaching Assistants

Thorsten Engesser Room 52-02-019

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Dipl.-Psych. Barbara Kuhnert

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Laura Wächter

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Lectures

Where

SR 01 – 018, Building 101

When

Lecture: Tuesday 14:00 – 16:00

Web page

`http://gki.informatik.uni-freiburg.de/teaching/ws1718/socrob/`

Classroom Training

Where

Building 101, Room 01–018

When

Thursday 14:00 – 16:00

Exercises: Procedure

- Exercise sheets will be handed out and posted on the web page on Monday.
  - Exercise sheets contain in-class exercises and homework exercises.
  - In-class exercises are solved live on Thursday.
  - Homework exercises are solved at home and handed in for marking.
- For the homework exercises you work in groups of size 2–3.
- Each group hands in one solution (in English or in German).
- Solutions have to be handed in until Monday a week after.
  - Every group gets access to a git repository (see current exercise sheet for instruction `http://gki.informatik.uni-freiburg.de/teaching/ws1718/socrob/exercises.html`)

Examination

- Admission to the exam: necessary to have reached at least 50% of the points on exercises.
- An oral or written examination takes place in the semester break.
- The examination is obligatory for all Bachelor students (oral) and Master students (oral or written).

Discussion

Expectations

Course Outline

17.10.	L: Organization & Expections
19.10.	L: Video-Session: Social Robots in the Media
24.10.	L: Introduction to Social Robotics as a Science
26.10.	Tutorial: Introduction to R
02.11.	P: Presentation of self-designed social robots
07.11.	L: Empirical Methods & Descriptive Statistics
09.11.	Classroom training
14.11.	L: Inferential Statistics
16.11.	Classroom training
21.11.	L: Chi-Square & Fisher's Exact Test
23.11.	Classroom training
28.11.	L: Special Topic „Trust in HRI“
30.11.	Reading Group
05.12.	L: Comparing means using t-Test
07.12.	Classroom training
12.12.	L: Comparing means using ANOVA
14.12.	Classroom training
19.12.	L: Non-parametric tests
21.12.	Classroom training
09.01.	VL: Special Topic „Robotic Companions“
11.01.	Reading Group
16.01.	L: Correlations
18.01.	Classroom training
23.01.	L: (Linear) Regression
25.01.	Classroom training
30.01.	Barbara on Factor Analysis & Robot Personality
01.02.	Barbara on Factor Analysis & Robot Personality
06.02.	Closing Week & Exam Preparation
08.02.	Closing Week & Exam Preparation

Objectives of this Course

- You have an idea about how to conduct your own empirical research in social robotics (or on some other HCI related topics) as your BA/MA project and/or BA/MA thesis:
  - You can read and understand scientific publications on social robotics.
  - You can formulate your own research questions.
  - You are able to operationalize these research questions.
  - You know how to report your own research results.

6.1 Results

We recruited 20 participants (8 female) from the local university population. The mode age (collected in ranges) was 26-30, at 35%.

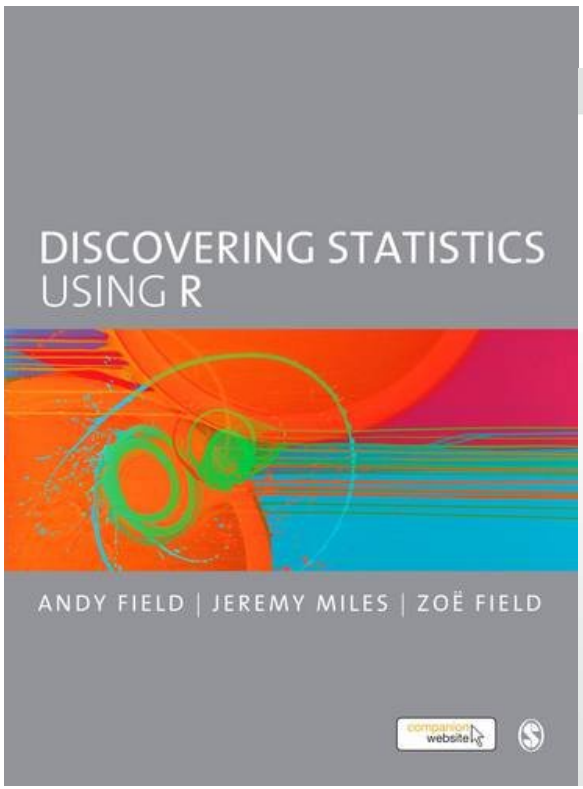
Repeated-measures ANOVA comparing all cue against the no-cue case) showed an effect of cue type on response time (Figure 4b, $F_{2.8,52.3}$=41.9, η^2=.69, p<.001, Greenhouse-Geisser correction), accuracy (Figure 4c, $F_{2.0,38.3}$=30.8, η^2=.62, p<.001, Greenhouse-Geisser correction), and cognitive load (Figure 4a, $F_{2.2,41.8}$=6.5, η^2=.26, p=.003, Greenhouse-Geisser correction). Planned contrasts against no cue showed all others to be more accurate and to have lower cognitive load (p<.002), while circle, bounce, and dark had faster response time; no response-time difference was found against target (p<.01). While Figure 4 shows overall means and confidence intervals, the within-participants statistics uses relational scores.

A Wilcoxon signed-rank test (one-tailed) confirms hypothesis H.1A predicting that Immanuel is perceived as more moral after the interaction than the participants' a-priori attribution of morality to robots in general ($Z(20) = -3.4, p < .001$). Further exploration of the semantic differential using two-tailed Wilcox signed-rank tests indicate that Immanuel appears more talkative ($Z(20) = -3.23, p = .001$), more

What the Social Robotics lecture is not

- It's not a robotics course
- It's not an AI course
- It's not a machine learning course

Literature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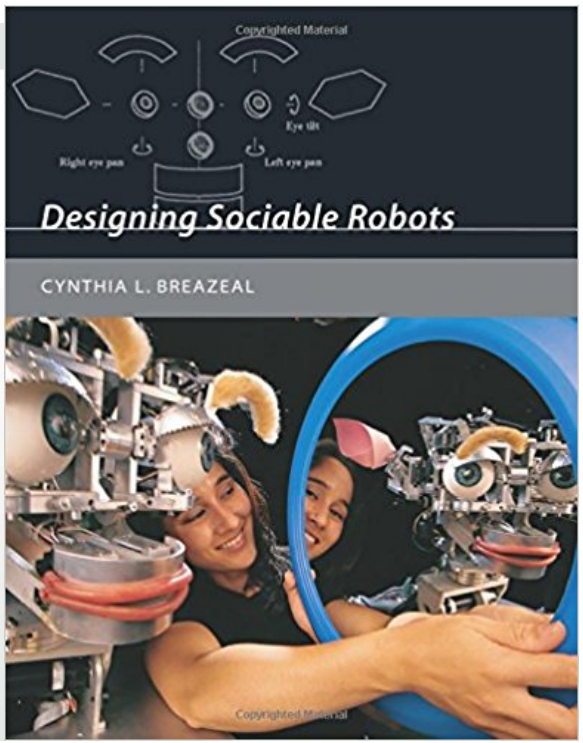
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Designing Sociable Robots
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Cliffhanger: Social Robots in the Media and Beyond

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