Lehrstuhl Steuerung, Regelung und Systemdynamik

Bachelor thesis

Empirical, Theory, Data Analysis

Human–AI Teaming Investigation through Survey Validation and Analysis

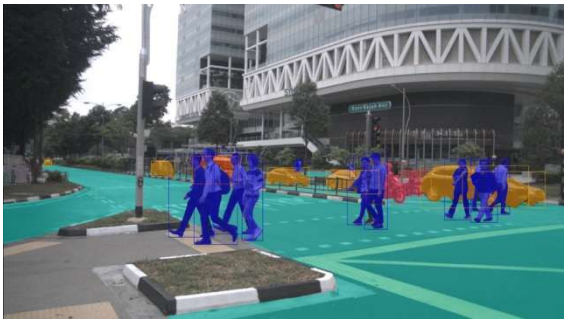
Keywords: Human–AI teaming, Survey study, Safety and Reliability

Conditions

Duration:	3 Months
Requirements:	Interest in empirical research, data analysis, and statistics The work requires full time work and should be finalized asap
Language:	German or English
Target groups:	Highly motivated Bachelor students

Content:

The increasing integration of Artificial Intelligence (AI) in various areas of application offers new technological possibilities for interaction between humans and machines. The concept of the "Human-AI Teaming" is gaining in importance, involving the effective collaboration of humans with autonomous or semi-autonomous systems. In transportation systems in particular, the question of how AI and humans can cooperate reliably and safely is highly relevant.



[www.nuscenes.org]

The aim of this thesis is to investigate the reliability of Human–AI teaming in the context of object recognition. More specifically, the study addresses how AI systems perceive and recognize objects compared to human perception, and how the workflow and cooperation between the two influence efficiency and reliability. For this purpose, survey instruments have already been developed in prior work. The task of this thesis is to (1) validate and improve the existing questionnaires if inconsistencies are found, (2) conduct the survey with a sufficient number of probands (>100), and (3) perform a detailed statistical evaluation of the results. The focus lies on identifying strengths, weaknesses, and potential biases in Human–AI teaming, as well as drawing implications for improving cooperation and reliability in safety-critical contexts. The financial resources required for recruiting and compensating the probands are already secured.

The steps in detail are:

- Review of material and literature: Screening of all available documents (existing questionnaires, prior drafts, notes) and short review of studies on AI- and human-based object recognition as well as survey methodology (0.5 months).
- Survey validation: Check of existing questionnaires, correction and improvement if necessary (0.5 months).
- Survey execution: Conduct survey with sufficient number of probands (0.25 months).
- Analysis and evaluation: Statistical analysis of survey results, identification of patterns, biases and implications for Human–AI teaming reliability (1.5 months).
- Documentation and presentation: Preparation of written thesis and final presentation of results (0.25 months).

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