BSc Seminar:
Aktuelle Forschung in KI & Robotik

Introduction

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Course Concept

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- Students should read current research papers
  - Get an impression of what is state-of-the-art
  - See what methods are actually used, they should learn about
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- This seminar
  - Reading papers from major conferences in detail
  - Identify structure of papers
  - Identify used methodologies
  - Read their reviews, identify structure
  - Write brief literature reviews (searching more related papers)

Cycle Structure

- We'll cycle through about 4 to 5 papers.

- In each cycle
  - You read a paper in advance; we go through the paper in ~ 2 sessions
  - Either have a literature assignment and session to discuss this
  - ...or have a review reading assignment and session

Reading Assignments

- Papers are taken from CoRL, R:SS, and other venues
- During the reading sessions we go round robin through all students, you need to be able to say something about:
  - List and explain what the authors claim the contributions are, i.e., what precisely is beyond previous work in this paper
  - Summarize the different areas of related work. What a key competing approaches and how to the authors compare themselves with them.
  - Explain the basic methodologies the paper builds on. (background vs. related work)
  - Explain figures and equations in the paper
  - Talk through the accompanying video
  - Explain the experiment settings (e.g. which data was collected) and results

Review Reading & Literature Assignments

- Searching related literature:
  - Which existing papers are most similar; did the authors correctly cite/discribe them?
  - What are “oldest” papers in this line of research/methods?

- Reading reviews – identify comments on:
  - Summary
  - Originality
  - Quality
  - Significance
  - Clarity
  - Minor comments

Organization

- ISIS as central webpage
- More general teaching material on:

  `https://www.user.tu-berlin.de/mtoussai/teaching/`

- Contact
  - Office: Ilaria Cicchetti-Nilsson `<office@lis.ut-berlin.de>`

Modul 41057

- 3 LPs (90h, 6h/w, 15 weeks), max. 12 Teilnehmer
- Lernergebnisse
  - Verständnis, welche Methoden in aktueller KI- und Robotik-Forschung tatsächlich genutzt werden
  - Motivation zum Erlernen relevanter KI-Methoden und zugrundeliegender Theorie (insb. der relevanten mathematischen Grundlagen)
- Lehrinhalte
  - Themen und Methoden neuer Publikationen auf KI & Robotik Konferenzen (insb. RSS, CORL) werden besprochen.
  - Studenten präsentieren Publikationen (im Stile eines reading club), erläutern deren Struktur, genutzten Methoden, und identifizieren die Relation zu vorherigen Arbeiten.

Modul 41057

- Voraussetzungen
  - Insb mathematische Grundlagen (lineare Algebra, Optimierung, Wahrscheinlichkeiten)
  - Bevorzugt erste Kontakte zu KI und/oder Robotik
- Prüfung:
  - unbenotet
  - Das Modul wird nur mit bestanden/nicht-bestanden bewertet. Hierfür werden wöchentlich Mitarbeits-Punkte vergeben. Jeder Student sollte bei allen Terminen aktiv bei der Besprechung der Forschung beitragen.