

# Alva Markelius - Curriculum Vitae

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Highly driven and ambitious Cambridge University AI Ethics & Society MSt student, Social Robotics Research Engineer, Top 100 Brilliant Women in AI Ethics™ 2024 and President of Cambridge University AI Ethics Society. Deeply fascinated by social robotics, the relationship between human cognition and AI and global socio-technical systems and narratives.

## RESEARCH ACTIVITIES:

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### University of Cambridge, King's College Cambridge, UK (2024-2028)

*Incoming PhD Student, Cambridge Trust Scholar*

- Department of Computer Science, Affective Intelligence and Robotics Laboratory. Supervisor, Prof Hatice Gunes.

### Brain+/DICE Lab, University of Gothenburg Gothenburg, Sweden (2022 - present)

*Research Engineer*

- Researching the use of LLMs in personalised and embodied contexts, with a main focus on ethical use and output control. Specific application development with LLM supervisor for driver monitoring system and biometric data.
- Part of STINT initiation grant funded project with Koç University developing and researching humanoid social robotics, human-robot interaction, affective computing and digitalised gamified cognitive interventions.

### EU Joint Programme – Neurodegenerative Disease Research Network Remote/Gothenburg (2022 - present)

*Network Organiser and Researcher*

- Forte-funded project which includes a research network aimed at exploring the possibilities of using digital technology (e.g. robotics, VR) and for implementation of cognitive training including differential outcomes training.

### RECOG-AI Leverhulme Centre for the Future of Intelligence Cambridge, UK (2022 - 2023)

*Research Collaborator*

- Research assistant in the DARPA-funded Kinds of Intelligence project RECOG-AI specifically aimed at a robust conceptual and methodological framework for benchmarking evaluation of cognitive capabilities and generality in AI.
- Specifically worked with task development for training AI agents in a novel and unique cognitive approach for learning affordances and object understanding.

### Human Factors Psychology Lab, Seoul National University Seoul, S. Korea (2021 - 2022)

*Robotics Research Assistant*

- Collaborated with an international and interdisciplinary cohort and assisted research in affective human/robot interaction, applied cognitive psychology, UI/UX, social robotics and VR.
- Active member of academic skill workshop. Demonstrated usage of Furhat robot design social interface and acquired field-relevant academic presentation and discussion skills.

### ETIS Laboratory CY Cergy Paris Université Paris, France (2022)

*Research Assistant*

- Recipient of the EUTOPIA EURSS research scholarship to visit and conduct research at human/robot interaction lab.
- Conceptualised and implemented research project *A Human-Robot Mutual Learning System with Affect-Grounded Language Acquisition and Differential Outcomes Training* which was finalist for best paper award at ICSR 2023.

## EDUCATION:

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### University of Cambridge, Lucy Cavendish College Cambridge, UK (2022 - present)

*AI Ethics & Society Master of Studies*

- Part time master studies with a main interest in socio-technical systems, social robotics, cognitive capabilities in AI, emotion recognition AI, technology policy, intercultural AI narratives and human rights impacted by AI.

### Seoul National University Seoul, S. Korea (2021 - 2022)

*Exchange year (Artificial Intelligence)*

- GPA 4.12 (Equivalence of First Class Honours classification).
- Relevant coursework: Explainable AI and Data Science, Affective Science, Psychology and Human-AI Interaction, Interdisciplinary approaches to AI, AI and Labour Economics and Cognitive Neuroscience.

### University of Gothenburg Gothenburg, Sweden (2019 - 2022)

*Cognitive Science Bachelor Degree*

- GPA 3.8 (Equivalence of First Class Honours classification).
- Achieved highest grade and highest overall exam mark of all students on two AI courses (Machine learning and Data Analysis, AI and Human Cognition).

- Board member Cognitive Science Student Association.
- Conducted thesis as part of international research project with Koç University in Türkiye; *Differential Outcomes Training of Visuospatial Memory: A Gamified Approach Using a Socially Assistive Robot*, published in International Journal of Social Robotics.

## WORK EXPERIENCE:

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### AI Lab Sweden AB Stockholm, Sweden (2022 - present)

*AI and Robotics Ethics Consultant*

- Consulting clients about technical and ethical approaches to AI innovation, development and deployment in light of current regulations, frameworks and principles for responsible AI. Focus on diversity, inclusion and responsible AI.

### University of Gothenburg Gothenburg, Sweden (2022 - 2023)

*Teacher assistant and lecturer: AI/Machine Learning/Affective Science*

- Taught and lectured on e.g. explainable AI at the course Machine Learning and Data Analysis. Practical assistance with programming and marking and computer science related parts of the cognitive science course.
- Teaching assistant and responsible for organising and carrying out inter-university course Mechanism of Emotion, focusing on theory of emotion and affective computing methodology with University of Warwick.

## EXTRACURRICULAR AND VOLUNTEER WORK

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### Cambridge University AI Ethics Society Cambridge, UK (2022 - present)

*President (previously Secretary and Events Coordinator)*

- President of a student run society aimed at spreading awareness on the social and political effects of technology.

### Centre for Human Inspired AI (CHIA) Early Career Community Cambridge, UK (2023 - present)

*Community Committee Member*

- Responsible for organising events for a wide community of Cambridge postgraduate students in AI.

### AI Ethics & Society Cambridge Delegation to Nairobi Nairobi, Kenya (2023)

*Delegate*

- Part of delegation of Cambridge AI Ethics students to learn about the promises and potential pitfalls of AI in Kenya and East Africa by engaging with i.e. Kenyan government, Microsoft, IBM, British Commission and Lawyer's Hub.

### Cambridge AI Safety Hub Fellowship Cambridge, UK (2022)

*Fellowship Participant*

- Fellow in technology focused reading/discussion group on e.g. interpretability, AI capabilities and generality.

### UN Climate Change Conference Paris, France (2015)

*Representative*

- Representative for association Nature and Youth Sweden at the UN Climate Change Conference (COP21) in Paris.

## AWARDS

**100 Brilliant Women in AI Ethics™** - Women in AI Ethics annual list of rising stars and pioneers in the AI Ethics space.

**Nova 111 Student List 2023** - one of the 111 young people with most potential in Sweden (Mathematics, Data, and Analytics)

**Career Stipend Sweden 2022** - prestigious stipend awarded to promising early career students in Sweden.

## SELECTED INVITED TALKS

**Cambridge Centre for Human Inspired AI - Social Robotics Research** Cambridge (2023)

**Microsoft Share & Evolve Sweden – AI Ethics and Responsibility** Stockholm (2023)

**Oxbridge Robotics Summer School – Robotics and Ethics** Cambridge (2023)

**EQUALS EU – Whose Digital Future? Gender, Rights, Inclusion, and Exclusion** Geneva (2023)

**Nordic China Startup Forum – AI Trends, Business and Female Leadership** Online (2022)

**Science Festival Gothenburg – AI, Robotics and Science Fiction** Gothenburg (2020)

**Climate Parliament, Stockholm University – AI, Climate Change and Science Fiction** Stockholm (2018)

## MISCELLANEOUS

**Software abilities:** Software development and computer programming (Python, R, Matlab, HTML, LaTeX) and machine learning (Tensorflow, SKLearn, Shap, Lime). Proficient with iMotions, Unity, SPSS and Microsoft Office.

**Skills:** Experienced critical and creative thinker and a fast learner. Comprehensive computer and technology skills including programming, technical writing and data analysis. Well-rounded skill set in qualitative and quantitative research design and analytics. Recognised for enthusiastic work-ethics, collaboration and noteworthy written and verbal communication skills.

**Languages:** English (Fluent, IELTS 8.5), Swedish (Native), German (Fluent), Korean (Beginner).

## PUBLICATIONS

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**Markelius, A.,** Wright, C., Kuiper, J., Delille, N., Kuo, Y.T. (2024) The Mechanisms of AI Hype and its Planetary and Social Costs, *Topical Collection on The Ethical Implications of AI Hype: Examining the overinflation and misrepresentation of AI capabilities and performance*, Springer Nature AI & Ethics: <https://doi.org/10.1007/s43681-024-00461-2>

**Markelius, A.,** Sjöberg, S., Bergström, M., Ravandi, B.S., Vivas, A.B., Khan, I., Lowe, R.: (2023), Differential Outcomes Training of Visuospatial Memory: A Gamified Approach Using a Socially Assistive Robot. *International Journal of Social Robotics*. <https://doi.org/10.1007/s12369-023-01083-0>

**Markelius, A.,** Sjöberg, S., Lemhauri, Z., Cohen, L., Bergström, M., Lowe, R., Cañamero, L., (2023), A Human-Robot Mutual Learning System with Affect-Grounded Language Acquisition and Differential Outcomes Training. *International Conference on Social Robotics 2023. Finalist for Best Paper Award*. [https://doi.org/10.1007/978-981-99-8718-4\\_10](https://doi.org/10.1007/978-981-99-8718-4_10)

Chan, A., Salganik, R., **Markelius, A.,** Pang, C., Rajkumar, N., Krashennnikov, D., ... & Maharaj, T. (2023, June). Harms from Increasingly Agentic Algorithmic Systems. In *Proceedings of the 2023 ACM Conference on Fairness, Accountability, and Transparency* (pp. 651-666). <https://doi.org/10.1145/3593013.3594033>

### Upcoming 2024:

Vivas, A., Estévez, A. F., Khan, I., Roldán-Tapia, M. D., **Markelius, A.,** Nielsen, S., & Lowe, R., (2024). DigiDOP: A Framework for Applying Digital Technology to the Differential Outcomes Procedure (DOP) for Cognitive Interventions in Persons with Neurocognitive Disorders. Under review at *Neuroscience and Biobehavioral Reviews*.

Rutar, D., **Markelius, A.,** Schellaert, W., Burnell, R., Burden, J., Voudouris, K., Cheke, L., & Hernández-Orallo, J. (2024), Robust Evaluation of Affordance Understanding in Artificial Agents, *Unsubmitted manuscript*.

## CONFERENCE ACTIVITIES

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### International Conference on Social Robotics

Doha, Qatar (2023)

*Workshop Co-Organiser and Co-Chair, Robot Competition Judge*

- Co-Researching with Humans-in-the-Loop: Using participatory methods, research and co-design in HRI. Nomination for Best Paper Award

### IEEE International Conference on Robot and Human Interactive Communication

Busan, S. Korea (2023)

*Special Session Organiser, Chair and Reviewer*

- SARCHA: Socially-Assistive Robots in Clinical and Healthcare Applications.

### Upcoming 2024:

### International Conference on Social Robotics

Odense, Denmark (2024)

*Young Leaders Chair*

### IEEE International Conference on Robot and Human Interactive Communication

Pasadena, US (2024)

*Workshop Main Organiser*

- Large Language Models in the RoMan Age: Exploring Implications on Design, Ethics and Social Impact