Max Taylor-Davies

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Summary

I am a second-year PhD student in **cognitive science** and **robotics**. My research is primarily concerned with **social cognition**, in humans and artificial agents. I am also interested in multi-agent (reinforcement) learning, moral cognition, and AI alignment, among other topics.

Education

- **University of Edinburgh** — Edinburgh, UK
  PhD, Centre for Doctoral Training in Robotics and Autonomous Systems — *Sep 2022 – ongoing*
- **Imperial College London** — London, UK
  MEng Molecular Bioengineering; 1st class honours — *Oct 2017 – Jul 2021*

Employment

- **UCL Visual Plasticity Lab** — London, UK
  Research Assistant — *Mar 2022 – Sep 2022*
  - **Visualstim**: Designed and built a piece of software to configure and display various visual stimuli to mice during imaging experiments. The software had a simple, intuitive GUI - suitable for experimentalists with no programming experience.
  - **Sync computer**: Built a custom arduino system for microsecond-precision synchronisation between two-photon microscope, stimulus computer, running wheel and various cameras.
- **PolyAI** — London, UK
  Software Engineer — *June 2020 – June 2021*
  - **Platform**: Worked on a no-code web platform that clients could use to design and provision their own custom domain-specific dialogue agents.
  - **Analytics**: Built an in-house analytics platform for monitoring and visualising the outputs and performance of various deployed conversational agents. Included the ability to step through recorded conversation transcripts labelled with the intents and entities detected by the agent, and flag errors for future training.
- **MedEngine** — Berlin, Germany
  Software Engineer / Research Engineer — *June 2018 – Oct 2019*
  - **Medflix**: Designed and built an in-house system for storing and cataloguing data from hospital trials of the MedEngine device and app. Included the ability to watch video of the patient synchronised to captured motion data. The system made it significantly easier for MedEngine data scientists to search, review and label trial data.
  - **Flytta app**: Worked on a cross-platform mobile app for Parkinson's disease sufferers to better understand and manage their symptoms. Researched algorithms for monitoring tremor severity from accelerometer and gyroscope data. Investigated the use of simple NLP methods for tracking patient mood from free-text diary entries.

Teaching

- **Seminar in Cognitive Modelling** — University of Edinburgh
  Teaching assistant + marker — *2023-24*

Selected Publications

- **Taylor-Davies, M.** & Lucas, C.G. *Balancing utility and cognitive cost in social representation*(Information-Theoretic Principles in Cognitive Systems Workshop, NeurIPS 2023)
- McCallum, S., **Taylor-Davies, M.**, Albrecht, S. & Suglia, A. *Is feedback all you need? leveraging natural language feedback in goal-conditioned reinforcement learning* (Goal-Conditioned Reinforcement Learning Workshop, NeurIPS 2023, selected for spotlight talk)
- **Taylor-Davies, M.**, Droop, S. & Lucas, C.G. *Selective imitation on the basis of reward function similarity*(CogSci 2023)

Invited talks

- *Imitation, preferences and group identity* @ Computational Cognitive Development Lab, Brown University (November 2023)

Reviewing

- Information-Theoretic Principles in Cognitive Systems Workshop, NeurIPS 2023
- CogSci 2023