AIMS

EPSRC Centre for Doctoral Training in
Autonomous Intelligent Machines & Systems

Annual Review 2023/2024

Engineering and Physical Sciences Research Council

UNIVERSITY OF OXFORD

AIMS

EPSRC Centre for Doctoral Training in
Autonomous Intelligent Machines & Systems

Foreword

In this document we highlight what has happened in the past year of the AIMS CDT.

Welcome to the ninth annual review highlighting key aspects and activities of staff and students in AIMS during 2023/2024. This has been the tenth full year of the EPSRC Centre for Doctoral Training in Autonomous Intelligent Machines & Systems. The CDT is thriving with applications in excess >250 in the past year.

We welcome Sony, Rosebud AI, Microsoft, Marine AI and AIOI to our list of Industry Partners. Thanks to their generosity, we have been able to fully-fund more students this past year, and for future years.

The last year has been another successful year for publications to top conferences, students submitting their dissertations, and going to work for several companies, as well as in academia.

We held a very successful AIMS seminar series with speakers from the AIMS supervisory pool, industry representatives, including Mind Foundry, Nvidia, Roku, Archangel Imaging, Schmidt AI and OpenAI as well as universities across the world and AIMS faculty.

We would like to warmly acknowledge EPSRC and our industry partners for their continued support of studentships and internships.

Mike Osborne
Director

Alex Rogers
Co-Director

Wendy Poole
Centre Administrator

About Us

Autonomous systems powered by artificial intelligence will have a transformative impact on economy, industry, and society. Our mission is to train cohorts with both theoretical, practical and systems skills in autonomous systems - comprising machine learning, robotics, sensor systems and verification- and a deep understanding of the cross-disciplinary requirements of these domains. Industrial Partnerships have been and will continue to be at the heart of AIMS, shaping its training and ensuring the delivery of Oxford's world-leading research in autonomous systems to a wide variety of sectors, including smart health, transport, finance, tracking of animals, energy, and extreme environments.

The CDT is underpinned by key skills areas in four interconnected themes, in which Oxford has research strengths, led by members of the CDT team, and strengthened by industrial contacts.

Key Skills Areas

What's holding up the real-world impact of Artificial Intelligence? Today, too often, innovation is overly focussed on new component algorithms, particularly those from Machine Learning. To realise impact on the world, however, such algorithms must be integrated with complete autonomous *systems* – in which there are far–too–few trained experts. AIMS imparts unified training in four important and intimately connected components of such systems:

- Machine Learning, as a unifying core.
- Robotics & Vision.
- Cyber-Physical Systems (e.g., sensor networks); and
- Control & Verification.

As examples of autonomous systems, AIMS aim is at building systems to impact upon

- sustainable urban development (transport, financial services, and smart infrastructure),
- extreme and challenging environments (space robots and satellite data) and
- smart health (cancer diagnosis).

To deliver training in these core research themes, we delivered a series of modules in 2023/2024 in the following areas: Data Estimation & Inference, Machine Learning, Signal Processing, Optimization, Embedded Systems Programming, Introduction to Modern Control, Discriminative & Deep Learning for Big Data , Computer Vision, Autonomous Systems Safety & Governance, Systems Verification, Privacy & security, Reinforcement Learning, Internet of Things, Autonomous Robotics, Cooperative AI: Foundations & Frontiers and Deep Learning in Distributed and Constrained Systems.

Events, highlights, outreach, and publications

AIMS students have taken part in a wide range of research and outreach this last year. They have also published many papers at top conferences. These include: ICCV (International Conference on Computer Vision), BMVC (British Machine Vision Conference), TARK (Theoretical Aspects of Rationality and Knowledge), ICML (International Conference on Machine Learning), CVPR (Conference on Computer Vision and Pattern Recognition), NeurIPS (Neural Information Processing Systems.

Publications

(A full list of publications can be found at: https://aims.robots.ox.ac.uk/publications/) but here are just a few from the last year.

- Sarah Kiden, Bernd Stahl, Beverley Townsend, Carsten Maple, Charles Vincent, Fraser Sampson, Geoff Gilbert, Helen Smith, Jayati Deshmukh, Jen Ross, Jennifer Williams, Jesus Martinez del Rincon, Justyna Lisinska, Karen O'Shea, Márjory Da Costa Abreu, Nelly Bencomo, **Oishi Deb**, Peter Winter, Phoebe Li, **Philip Torr**, Pin Lean Lau, Raquel Iniesta, Gopal Ramchurn, Sebastian Stein, and Vahid Yazdanpanah. 2024. Responsible AI governance: A response to UN interim report on governing AI for humanity. Public Policy, University of Southampton. 23pp. (doi:10.5258/SOTON/PP0057)

  (Apart from the first author, all the other authors contributed equally and were ordered alphabetically by their first name.)

  BibTeX citation - https://eprints.soton.ac.uk/cgi/export/eprint/488908/BibTeX/soton-eprint-488908.bib
- Junyu Xie, **Charig Yang**, Weidi Xie, Andrew Zisserman. *Moving Object Segmentation: All You Need Is SAM (and Flow).* In ACCV, 2024.Oishi Deb, KR Prajwal, and Andrew Zisserman. 2023. "New keypoint-based approach for recognising British Sign Language (BSL) from sequences". In International Conference on Computer Vision (ICCV) Hands Workshop.
- **Oishi Deb**, Emmanouil Benetos, and Philip Torr. 2023. "*Remaining-Useful-Life Prediction and Uncertainty Quantification using LSTM Ensembles for Aircraft Engines".* In Workshop on Advancing Neural Network Training: Computational Efficiency, Scalability, and Resource Optimization (WANT@NeurIPS 2023).
- **C. Yang**, W. Xie, A. Zisserman. *"Made to Order: Discovering monotonic temporal changes via self-supervised video ordering".* ECCV 2024.
- **Jonathan F. Carter,** João Jorge, Oliver Gibson, Lionel Tarassenko. *"SleepVST: Sleep Staging from Near-Infrared Video Signals using Pre-Trained Transformers".* Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024.

- Tim Franzmeyer*, **Aleksandar Shtedritski***, Samuel Albanie, Philip Torr, Joao F. Henriques, Jakob Foerster. *"HelloFresh: LLM Evaluations on Streams of Real-World Human Editorial Actions across X Community Notes and Wikipedia edits"*. ARL 2024.
- **Aleksandar Shtedritski**, Christian Rupprecht, Andrea Vedaldi. *"Shape-Image Correspondences with no Keypoint Supervision"*. ECCV 2024.
- **Yash Bhalgat**, Iro Laina, João F. Henriques, Andrew Zisserman, Andrea Vedaldi. *"N2F2: Hierarchical Scene Understanding with Nested Neural Feature Fields"*. ECCV24
- **Shu Ishida**, Gianluca Corrado, George Fedoseev, Hudson Yeo, Lloyd Russell, Jamie Shotton, Joao F. Henriques, Anthony Hu. *"LangProp: A code optimization framework using Large Language Models applied to driving"*. ICLR 2024 Workshop on Large Language Model (LLM) Agents.
- Yoshua Bengio, Geoffrey Hinton, Andrew Yao, Dawn Song, Pieter Abbeel, Trevor Darrell, Yuval Noah Harari, Ya Qin Zhang, Lan Xue, Shai Shalev-Shwartz, Gillian Hadfield, Jeff Clune, Tegan Maharaj, Frank Hutter, Atilim Gunes Baydin, Sheila McIlraith, Qiqi Gao, Ashwin Acharya, David Krueger, Anca Dragan, Philip Torr, Stuart Russell, Daniel Kahneman, **Jan Brauner** and Soren Mindermann. *"Managing extreme AI risks amid rapid progress"*. Science 2024
- **Oishi Deb**, Philip H.S. Torr, Sarah Kiden, Sebastian Stein, Sarvapali D. Ramchurn, et al. *"Responsible AI governance: A response to UN interim report on governing AI for humanity"*. Responsible AI (RAI) UK, 2024; Full Paper Link; DOI:10.5258/SOTON/PP0057
- Shuai Chen, **Yash Bhalgat**, Xinghui Li, Jia-Wang Bian, Kejie Li, Zirui Wang, Victor Adrian Prisacariu. "Neural Refinement for Absolute Pose Regression with Feature Synthesi"s. CVPR2024.
- Yifu Tao, **Yash Bhalgat**, Nived Chebrolu, Maurice Fallon. *"SiLVR: Scalable Lidar-Visual Reconstruction with Neural Radiance Fields for Robotic Inspection"*. ICRA 2024.
- **Aleks Petrov** and Adel Bibi. *"When Do Prompting and Prefix-Turning Work"*. ICLR2024.
- **Oishi Deb**, Prajwal Kondajji Renukananda, Andrew Zisserman, *"New keypoint-based approach for recognising British Sign Language (BSL) from sequences."* - BMVC 2023 CADL (Computational Aspects of Deep Learning) - Oral Presentation; and also at ICCV 2023 HANDS.
- Jishnu Mukhoti*, **Andreas Kirsch***, Joost van Amersfoort, Philip HS Torr, and Yarin Gal. *"Deep Deterministic Uncertainty: A New Simple Baseline."* In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)* 2023.
- **Kelsey Doerksen**, Isabelle Tingzon, and Do-Hyung Kim. *"AI-powered school mapping and connectivity status prediction using Earth Observation"*. ICLR 2024 Machine Learning for Remote Sensing Workshop.
- **Benedetta L Mussati**, Helen McKay (Mind Foundry); Stephen Roberts. *"Neural Processes for Short-Term Forecasting of Weather Attributes"*. ICLR2024.

Internships

- Meta Reality Labs, Google DeepMind, United Nation's Children's Fund (UNICEF), European Space Agency, Microsoft Research Cambridge, Wayve, Cohere, Oxford Asset Management and Adobe.

Outreach/Invited Speaker

- Keynote speaker at the SLU Educational conference on Ethical uses of AI
- Invited speaker at the European Space Agency - ECMWF Machine Learning for Earth System Observation and Prediction Workshop
- Invited speaker for Space Northwest's Ai and Space panel for Seattle Space Week
- Selected speaker for Oxbridge Women in Computer Science Conference for my talk: Global AI-Powered School Connectivity Prediction with Earth Observation
- Invited speaker for the Vice Chancellor's International Women's Day Panel: How can we make AI a force for inclusion?
- Invited speaker for the Oxford Women in Leadership "Women in Technology" event
- AIMS student gave an invited talk earlier this year at the Wolfson Cross-Disciplinary Machine Learning (XML) cluster on non-invasive inner speech decoding.
- "Deep Learning for Computer Vision: Applications to Ghanaian context" given at the IndabaX Ghana conference
- "Deep Learning for Computer Vision" given at Rizvi College of Engineering, Mumbai, India
- Oral/highlighted talk on a recent paper (https://arxiv.org/pdf/2405.05852) at the Generative AI for Decision Making workshop at ICML 2024 in May.
- Talks at the Technical AI Safety conference in Tokyo and at Google Research.
- Took part in the Maths Festival as part of AIMS Public Engagement – "Reinforcement Learning as a Treasure Hunt" and "Understanding uncertainty with mystery boxes"
- Attended Science Oxford Family Science Day – "Exploring AI painting techniques"

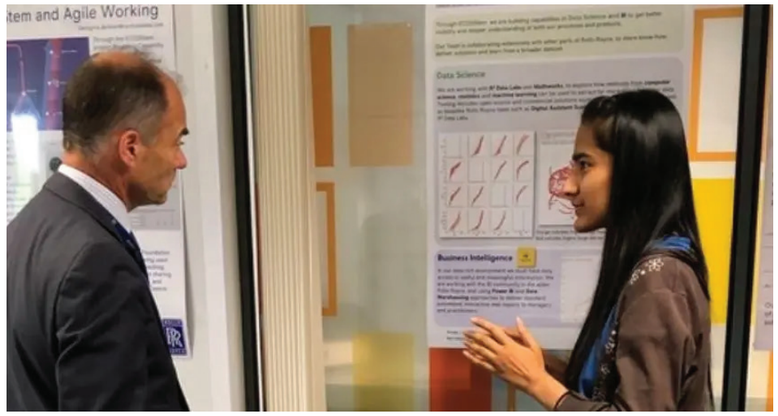
Impact/Achievements

- SleepVST: Sleep Staging from Near-Infrared Video Signals using Pre-Trained Transformers" accepted at CVPR 2024, and which received a 'Highlight Paper' award:
- AIMS Student working with a bird expert and researcher at Oxford to use recent method for open-world object counting (CountGD) to count birds to better understand the influence of climate change on animal populations.
- Received a Best Poster Award at the British Machine Vision Conference (BMVC'2023).
- Paper 'Can Learned Optimization Make Reinforcement Learning Less Difficult' got a spotlight at a workshop (AutoRL Workshop @ ICML24).
- Presented a paper 'Cooperation and Alignment in Delegation Games' at the main track of IJCAI 24 in Jeju.
- Contributed to several safety evaluation exercises with the new UK gov AI Safety Institute and their writeups (including lots of gov internal writeups as well as their first public technical blog post)
- Engaged with policymakers within the UK DSIT and US NIST feeding into the Seoul Ministerial Statement and Seoul Declaration
- Engaged with technical staff at AI labs including Anthropic, OpenAI, Google DeepMind, and Meta, as well as at other AI stakeholders including METR, RAND, Apollo AI, and Carnegie Endowment for International Peace
- Contributed to the paper 'Foundational Challenges in Assuring Alignment and Safety of Large Language Models', a multi-author survey and agenda paper, which is accepted at TMLR
- Presented a paper called "Policy-Guided Diffusion" at the Reinforcement Learning Conference in Amherst, Massachusetts. Gave a talk about the paper in the main conference.
- AIMS student was a judge for the Goldsmith's Craft & Design Council Competition for the "Best Use of AI in 2D Design" award.
- Paper won best paper at the GRaM workshop at ICML.
- Received the Entropic award for most surprising negative result at the "I Can't Believe It's Not Better" workshop at NeurIPS 2023 for our paper When Do Prompting and Prefix-Tuning Work? A Theory of Capabilities and Limitations.

Oishi Deb contributes to UN consultation on AI Report

Earlier this year Oishi Deb contributed to the United Nations' consultation on the Interim Report, titled 'Governing AI for Humanity', which calls for a more united response to how AI is developed and used around the world

Oishi Deb (Kellogg College) is a DPhil/AIMS CDT candidate jointly at the Departments of Engineering Science and Computer Science. Her research focuses on generative AI for computer vision and she is currently working on the articulation of deformable 3D objects using diffusion models at the Visual Geometry Group and Torr Vision Group Research Labs.



Earlier this year Oishi contributed to the United Nations' consultation on the Interim Report, titled *'Governing AI for Humanity.'* Consultants from Responsible AI UK with varying levels of experience from across industry and academia were invited to contribute, and Oishi was the only DPhil student to be selected. The report calls for a more united response to how AI is developed and used around the world. Due to her keen interest in issues around the safety and governance of AI, Oishi was thrilled to be involved.

Oishi returned to education after a period of working in industry. Following the completion of her undergraduate degree in Software and Electronics Engineering, she worked for Rolls-Royce in Software Engineering, where she was selected to present to the then-CEO, Warren East.

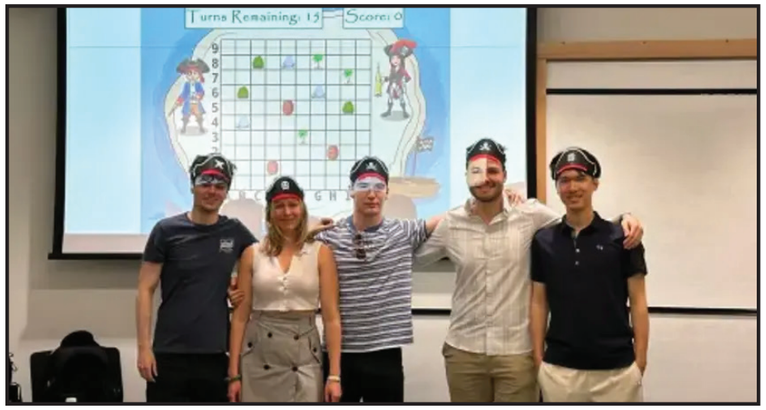
She then returned to education to study an MSc in Artificial Intelligence and was funded by the highly competitive Google DeepMind Scholar programme. Oishi is currently an ELLIS Oxford DPhil candidate, and co-chairs the ELLIS Reading Group on 'Mathematics of Deep Learning.'

Oishi describes studying at Oxford as very rewarding and describes Kellogg as having "a great community of excellent Computer Science and Engineering Science researchers and Fellows, so meeting people from my department is very convenient."

Oishi is also the MPLS EDI Fellow, representing both Kellogg College and the Department of Engineering Science, Oxford.

Jacques Cloete - Reinforcement Learning as a Treasure Hunt

Jacques Cloete (AIMS CDT) and his team of DPhil students created this pirate-themed treasure hunt teaches the Exploration/Exploitation Dilemma in machine learning through interactive play. Here, Jacques explains the game and provides everything you need to use it yourself in your outreach and engagement activities.



This blog post was written by DPhil student **Jacques Cloete**. Along with his team of fellow DPhil students, they were challenged to develop and deliver a new public engagement with research activity as part of their training in the **AIMS** and **StatML** Centre for Doctoral Training (CDT) programmes.

Reinforcement Learning as a Treasure Hunt is a pirate-themed educational children's game that tasks the player with collecting as many coins as they can within a limited number of turns. The coins are buried on a desert island, their locations initially unknown to the player. However, they follow a pattern in how they are buried, related to the landmarks scattered around the island. By figuring out the pattern, the player can determine where the remaining coins are and use this to maximise their score.

This game seeks to teach children about the Exploration/Exploitation Dilemma, a key concept in reinforcement learning. The idea is that an agent (in this case, the treasure hunter) should try to explore the unknown environment to learn which actions will give it the highest expected reward (in this case, the number of coins it collects), but it must also take the opportunity to extract this reward; since the agent has a limited number of actions, it must strike a balance between these goals.

The game was originally designed to be played by children aged 5-13, but we found that it was enjoyed by players of all ages. It can be run as an interactive activity perfect for family-friendly events; we ran the game as an activity at the Oxford Maths Festival 2024 to great success. Since the placement of the coins and landmarks is randomly generated for each run, the game offers plenty of replayability, and we had children coming back many times to try and beat their high scores.

The game is written entirely in MATLAB, and can be run by anyone with MATLAB installed on their computer. The game itself as well as information on how to play, credits, an example pre/post-game script and more can be found in the game's GitHub repository:

Credits:
Lead Game Designers: Jacques Cloete, Harry Mead
Software Developers: Jacques Cloete, Harry Mead
Maintainer: Jacques Cloete
Documentation Author: Jacques Cloete
Pre/Post-Game Script Writer: Darius Muglich
We thank Luisa Kurth, Shozen Dan, Paula Cordero Encinar, Marcel Hedman and Rafael Brutti for their suggestions that helped to shape the design of the game.

Kelsey Doerksen works with United Nations and European Space Agency to enable internet connectivity in schools.

Earlier this year, Kelsey Doerksen participated in a first-of-its kind joint research internship with the United Nations Children's Emergency Fund (UNICEF) and the European Space Agency Φ-lab to work on the Giga Initiative.

Kelsey Doerksen (Keble College) is a DPhil/AIMS CDT candidate in the Department of Computer Science. Her research focuses on using AI with Earth Observation data for Climate, Disaster Preparedness and Humanitarian Capacity Building contexts in the Oxford Applied and Theoretical Machine Learning Group.

As a part of her internship, Kelsey visited the United Nations headquarters in Geneva, Switzerland, and spent a week in Geneva at the UNICEF Giga off-site to collaborate with the global team working on the joint goal to connect every school to the internet and every young person to information, opportunity and choice.

During the second-half of her internship, Kelsey was hosted at the European Space Agency Φ-lab in Frascati, Italy, the Earth Observation Innovation hub of ESA. As a Visiting Researcher at ESA, Kelsey worked on building ML models to map internet connectivity in the Global South using Earth Observation satellite data, and her work was accepted at the 2024 ICLR Machine Learning for Remote Sensing Workshop.

AIMS CDT Cohort 2024

JOHN BELCHER-HEATH

My interest in intelligent systems dates back to my school days, where I explored using Arduino IoT boards, and further compounded after I undertook an internship with a marine autonomy company, Marine AI, during my undergraduate studies. The company have since become my employer and sponsor for AIMS. In the last few years working for them, I have been involved with projects such as the Mayflower Autonomous Ship (MAS) and the No Manning Required Ship (NOMARS); both are projects at the forefront of maritime autonomy.

I recently graduated from the University of St Andrews with a Master of Mathematics, during which time I undertook an industry-partnered final year project with Marine AI, which focused on horizon placement in maritime settings using inertial measurements, using a computer vision and optimisation methods to fine-tune the relationship. I was also responsible for creating the technology sector of the University's Investment Society, and contributed multiple pieces of work to a student-based think tank exploring themes such as national digital security and assistive technology. In my free time, I play Rugby and take part in Powerlifting, having played two Scottish varsity matches and competed in the BUCS Scottish University powerlifting competition. I hope to continue both sports whilst at Oxford - and maybe try some more!

I look forward to starting the CDT and enhancing my technical skillset to complement my mathematics background.

HUGH BLAYNEY

My background is originally in Physics, graduating from Imperial College London with a degree in Theoretical Physics in 2019, followed by an MSc in Computer Science at the University of Oxford. Through this master's programme I became interested in ML on graph data, initially with applications to logical inference and knowledge graphs and then later, in my work as a Senior AI engineer at an Autonomous Vehicle startup, geometric graphs representing entity interactions and lane networks. Reading and conducting research in this area gave me an appreciation of invariance and equivariance in ML models, leading to an interest in the field of Geometric Deep Learning. Within the AIMS CDT I am hugely excited to explore questions around machine learning on graph and geometric data, and I'm always keen to broaden my horizons and learn about new and emerging areas. Outside of research I enjoy running, cycling and singing, in no particular order and typically not at the same time

GEORGIA CHANNING

Before AIMS, I completed an MSc in Advanced Computer Science at Oxford as a Google DeepMind Scholar and a BSc in Computer Science at the University of Tennessee. Alongside my studies, I have tackled a variety of computer vision and NLP tasks at the Center for Advanced Defense Studies, researched hyper-spectral imaging at UC Berkeley, and worked as a Staff Researcher at Global Computing Lab on neural architecture search. Outside of the lab, I can be found at the movies, photographing, or studying natural languages.

RAVI HAMMOND

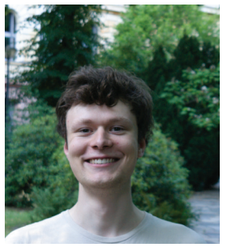
I hold a Bachelor's and Master's degree in Computer Science from the University of Adelaide, Australia, where my work focused on reinforcement learning and multi-agent systems. During my time with AIMS, I plan to investigate how human-AI coordination can be enhanced through natural language, and I'm eager to develop cutting-edge solutions to improve AI negotiation and collaboration.

Throughout my studies, I've had the opportunity to intern at several tech companies, including Google, Microsoft, Palantir, and Atlassian. These experiences have allowed me to gain skills across various roles, ranging from Software and Site Reliability to Machine Learning Engineering. Beyond academia, I was recently honoured with the Citizen of the Year award from my hometown for my work with Ravi's Study Program (RSP), a non-profit bootcamp I founded to help students succeed in interviews at major tech companies. I also had the opportunity to co-lead a team of over 40 engineers in the 2021 NASA Space Robotics Challenge, where we won 3rd place and the Innovation Award.

Outside of work, I enjoy board games, chess, creating music, and travelling!

JOHN KWON

I grew up in both South Korea and the UK, and graduated from the University of Cambridge with a BA in Classics, with a top-of-cohort thesis on ancient Greek mathematics. I then undertook two master's degrees in Computer Science at Imperial College London, specialising in natural language processing and robotics. I developed my interest in these fields further with a research internship at the Robot Learning Lab, also at Imperial, where I explored zero-shot end-effector trajectory generation for robot manipulation tasks, as well as failure detection and re-planning, with large language models (LLMs). Prior to starting the AIMS CDT, I also spent a few months with the Neural Processing Lab at the Oxford Robotics Institute, working on LLM-guided neural speech decoding. Outside of my studies, I enjoy playing sports (mainly football and squash), making music, and attending life drawing workshops.



JAREK LIESEN

For most of my life, I've lived near or in Berlin. I hold a bachelor's degree in computational science from the University of Potsdam, and a master's degree in computational Neuroscience from BCCN Berlin. During my studies, I did small research projects on various topics, including modelling neural data, symbolic ML, multi-agent robot planning, XAI, adversarial attacks, and RL. I specialized in RL, writing my thesis and first first-author paper on synthetic environments, which train agents more efficiently than their evaluation environment.

Parallel to my studies, I co-founded and steered [BLISS Berlin] (https://bliss.berlin), a non-profit organization that organizes AI-related events for students and young professionals. These include a regular speaker series, hackathons, reading groups, and networking events with hundreds of attendees. I also spend much time bouldering, singing, baking, and playing chess and Factorio.

SAMUELE MARRO

I'm interested in the theoretical & fundamental properties of generative models, such as the connections between different types of models and the factors that contribute to a model's performance. I'm also working on communication protocols between language models**.**

Before joining AIMS, I obtained an MSc in Artificial Intelligence and a BSc in Computer Science from the University of Bologna. I also hold an Excellency Degree from the Institute of Superior Studies of Bologna.

My work at AIMS is funded by Microsoft Research, to which I'm deeply grateful.

In my free time, I love creating new board games, playing D&D and bullet hell games, and enjoying other chiefly nerdy activities.

Website: **https://samuelemarro.it/**
LinkedIn: **https://www.linkedin.com/in/samuelemarro/**
Github: **https://github.com/samuelemarro**

J ROSSER

Growing up in Bristol, I developed a strong passion for building things and making a positive impact on the world. This led me to pursue an MEng in Engineering Science at the University of Oxford, where I was awarded an Academic Scholarship and graduated with First Class Honours. I specialised in Deep Learning and Computer Vision, with my Bachelor's and Master's theses lying at the intersection of Biomedical Engineering and Computer Vision.

Since graduating, I have held lead ML Research Engineer positions at three London-based tech startups, exploring a diverse set of research foci including Recommender Systems, Geometric Deep Learning, and more recently, LVLM-Based Multi-Agent Frameworks and Reinforcement Learning. Alongside this, I have enjoyed developing my leadership skills and consolidating my software engineering skillset in both backend and frontend engineering, focusing on clean, test-driven code. In my free time, I enjoy playing the trumpet professionally in several London-based funk bands.

GitHub: **https://github.com/J-Rosser-UK**
LinkedIn: **https://www.linkedin.com/in/j-rosser/**

CHARLOTTE SWEENEY

Before joining AIMS, I completed my MSc in Statistical Science here in Oxford where I developed my interests in network analysis and Bayesian methods alongside completing a dissertation on uncertainty quantification in protein structure prediction. Prior to my Master's, I did my Bachelor's in Maths and Computer Science at the University of Edinburgh. During my undergrad, my fourth-year project allowed me to explore links between machine learning and algebraic topology. I also completed a research internship on the UNIQ+ DeepMind programme where I spent time exploring neural network generalisation under the double descent phenomenon.

I'm excited by the range of topics and projects that AIMS has to offer and I look forward to seeing where they will take me in my DPhil. Outside of work, I love to cook and read a good fantasy book – especially if a glass of wine is involved. I also always enjoy spending time with my rabbits (and family) back home on the Wirral.

THEODORE WOLF

I am a frenchie who grew up in London and ended up studying Astrophysics and Physical chemistry at UCL. I followed that up with a Masters in Machine Learning also at UCL. After which, I joined Carbon Re, a UK startup focused on reducing carbon emissions from heavy industry through improved control of cement plants. Climate change is a problem that I deeply care about and wish to find solutions to with machine learning. As a result, most of my research interests relate to climate change mitigation in some aspect, such as physics-informed ML, data-driven discovery of physics and optimal control of real-world systems. I have a particular interest in reduced-order weather and climate modelling, a problem that is (thankfully) getting more and more attention! After going to NeurIPS in 2023 and meeting some amazing people from AIMS, I was inspired to apply to the program myself.

In my spare time, I enjoy cooking, climbing, writing blogs and reading. I am also interested in entrepreneurship and love learning new things.

AIMS Contacts

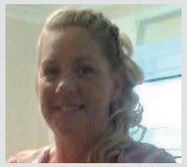
The AIMS administration team comprises the Director, the co-Director and the Centre Administrator.

MICHAEL OSBORNE

Michael A Osborne is an expert in the development of intelligent algorithms capable of making sense of complex big data. His work in Machine Learning and non-parametric data analytics has been successfully applied in diverse and challenging contexts. For example, in astrostatistics, Michael's probabilistic algorithms have aided the detection of planets in distant solar systems, and in autonomous robotics, his work has enabled self-driving cars to determine when their maps may have changed due to roadworks. More recently, he has addressed key societal challenges, analysing how intelligent algorithms might soon substitute for human workers, and predicting the resulting impact on employment. Michael is an Associate Professor in Machine Learning, an Official Fellow of Exeter College, and a Faculty Member of the Oxford-Man Institute for Quantitative Finance, all at the University of Oxford.

ALEX ROGERS

I originally studied Physics at Durham University before joining Schlumberger as a wireline logging engineer. After five years working in various oilfields around the world, I took suspended employment to study for a PhD applying statistical physics to models of evolving populations. Upon completing my PhD, I worked for a spin-out from the Santa Fe Institute applying complexity science to business problem before returning to academia, initially at the University of Southampton, and now at the University of Oxford.

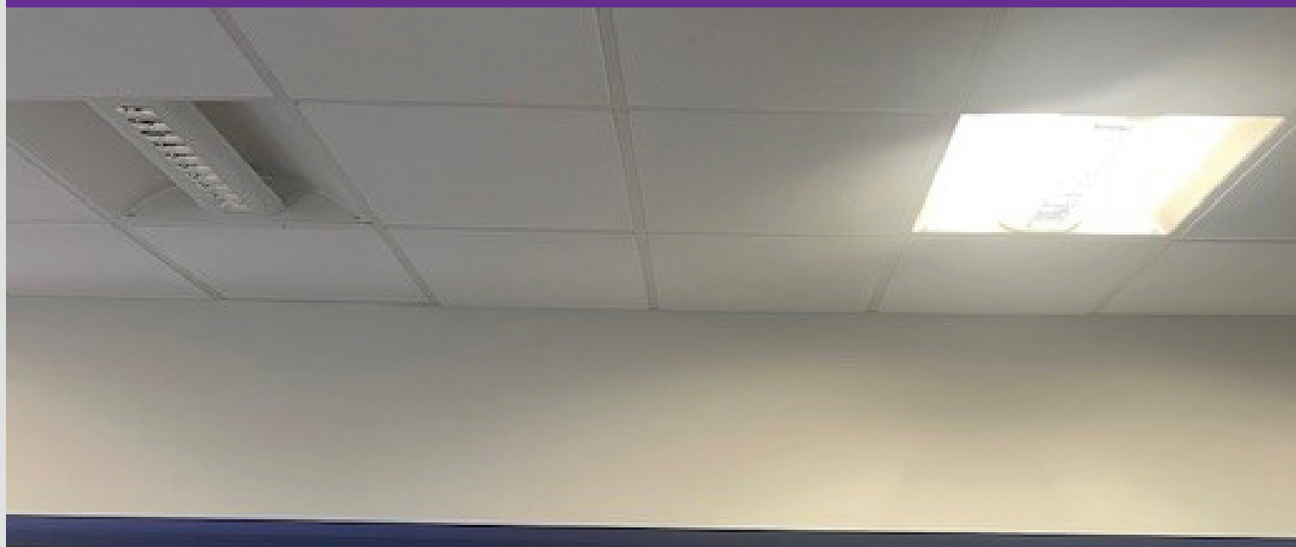


WENDY POOLE

I have been working in the University for 30 years now. I accepted the position as CDT Centre Administrator, after working in the Department of Computer Science as the MSc Course Administrator for 20 years.

Academic Supervisors

A full list of academic supervisors can be found at:
http://aims.robots.ox.ac.uk/academics-and-staff/



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