

Tadayoshi Kamegai

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EDUCATION

University of Oxford

Oct 2022 – Jun 2026

Master in Mathematics and Computer Science

- Postmaster of Merton College, University of Oxford
- First Class in Year 2 Examinations, Distinction in Year 1 Preliminary Examinations
- Relevant courses: Functional Programming, Lambda Calculus, Topology, Logic and Proof, Rings and Modules

EMPLOYMENT / PROJECT COLLABORATION

Mobility Reading Group, University of Oxford | Research Assistant

Jun 2024 – Present

- Advisor : Prof. Nobuko Yoshida
- Topics : Multiparty Session Types, Coq Mechanization
- Formally verified subject reduction in Synchronous MPST with plain coinductive merging in Coq

Nikkei | Intern, *Data Engineer*

Sep 2023

- Analyzed internal data from Nikkei Atlas to identify demographic and usage trends with SQL, Python and BigQuery
- Implemented a refinement of Nikkei internal search engine accuracy using Google's Natural Language Processing API framework
- Co-developed supplementary chat-bot using GPT and FastAPI as a client-side extension

teamLab | Intern, *Machine Learning Team*

Jul 2023 – Aug 2023

- Developed and presented an optimization algorithm on placing moving ropes without collision in 3D space
- Improved heuristic score by 28.5% compared to client's in-house model, and automated the full optimization process to be used in future projects and exhibits
- Improved precision and running time with annealing and concurrency in C++

Oxford Artificial Intelligence Society | Researcher, *Fairness Diffusion Models Team*

Dec 2023 – Sep 2024

- Generating models and exploring methods to extrapolate age while disentangling race in latent space within stable diffusion

RESEARCH

Invited Talks / Lectures

- **Subject Reduction for Synchronous MPST in Coq.** Nov 20, 2024
Final lecture of Master's Course in *Distributed Processes, Types and Programming*, University of Oxford

Contributions

- Notes on coinduction, A Duality in Proof Structures: Intuition for Bridging Induction and Coinduction, Nov 2024
- Palindromic primes under prime bases, entries A372141 and A372142 in The On-Line Encyclopedia of Integer Sequences, Apr 2024
- Probability sequence on a coin flipping game variant, entry A369580 in The On-Line Encyclopedia of Integer Sequences, Jan 2024

Grants

- Yanai-Tadashi Foundation Scholarship : Full funding of tuition, room and board, insurance plus an additional living stipend for the duration of the undergraduate degree (Approx. £270,000; 2022 ~ 2026)
- Merton Summer Project Scheme : Full funding of accomodation and hall expenses during Summer Research
- Exhibition Scholarship by Merton College, University of Oxford

EVENT ORGANIZATION

Oxford University CompSoc | Head of Talks

May 2023 – Present

- Responsible for inviting and coordinating events with internal and external speakers in computer science
- Past speakers: Kevin Buzzard, David J. Malan, Peter Millican, and Brent Mittelstadt