Dr Thomas Frost

London, UK | thomas.frost.21@alumni.ucl.ac.uk | linkedin.com/in/drthomasfrost | thomasfrost.io

Profile

Oxford-trained physician and machine learning researcher, concluding a PhD in AI-enabled healthcare at UCL. I specialise in reinforcement learning for high-stakes clinical systems, with my research spotlighted on the TalkRL podcast. During my PhD, I also released Insulin4RL, an open-source dataset for healthcare-based reinforcement learning; supported the development of FlowEHR, a local hospital platform for ML development and deployment; and provided formal evaluations of LLM discharge summaries.

Education

University College London (UCL) — London, UK
PhD in AI-enabled Healthcare — *Sept 2022 — Expected Oct 2026*

- **Thesis**: "Offline reinforcement learning for clinical data with natural timings."
- Designed a novel machine learning system for ICU infusion dose recommendations using complex clinical data.
- Created and published Insulin4RL, a freely available dataset for reinforcement learning using naturally timed health data.
- Partnered with Microsoft and UCLH to help refine FlowEHR, a MLOps project for deployment of clinical ML models.

University College London (UCL) — London, UK
MRes (Master of Research) in AI-enabled Healthcare — *Sept 2021 — Sept 2022*

University of Oxford — Oxford, UK
BM BCh (Bachelor of Medicine, Bachelor of Surgery) — *Oct 2012 — Jul 2018*

University of Oxford — Oxford, UK
MA in Medical Sciences, First Class — *Oct 2014 — Jul 2015*

Work Experience

Emergency Medicine Clinician — London, UK
Homerton University Hospital — *Sept 2021 — Present*

- Delivering frontline care in high-pressure environments, routinely making safety-critical decisions with incomplete data.
- Coordination of multidisciplinary teams for management of trauma and resuscitation for unwell patients.

Junior Clinical Fellow in Emergency Medicine — Edinburgh, UK
NHS Lothian — *Aug 2020 — Jul 2021*

Foundation Doctor — Edinburgh, UK
NHS Lothian — *Aug 2018 — Jul 2020*

Certificates & Qualifications

Member of the Royal College of Emergency Medicine — Jan 2024
Royal College of Emergency Medicine

Technical Skills

- **Core**: Python, PyTorch, and data science suite (NumPy/Pandas/Polars/SciPy).
- **Advanced ML**: Reinforcement Learning, Time-Series Forecasting, Clinical Decision Support.
- **Cloud & Infrastructure**: AWS Compute (EC2/S3 for research workloads), FlowEHR (TRE User/Validator).
- **Clinical Products**: Human-in-the-loop Evaluation, Clinical Safety Metrics, Medical Data Privacy.

Awards and Recognition

- **TalkRL Podcast Guest:** Interviewed on TalkRL, which has featured guests from DeepMind, OpenAI, and Meta.
- **UCL Three-Minute Thesis**: University finalist, communicating complex AI concepts to non-technical audiences.
- **UCL Centre of Digital Innovation Scholar**: Awarded £5,000 AWS research credits + cloud computing mentorship.
- **UKRI Studentship**: Full PhD stipend + annual research budget for outstanding research potential.
- **Lord Crewe Scholar (Oxford)**: Awarded for academic distinction.

Selected Publications

Frost, T. & Harris, S. (2026). Insulin4RL: Real-time insulin management in the intensive care unit for offline reinforcement learning. Preprint arXiv:2606.19481.

Frost, T. & Harris, S. (2026). Insulin4RL: Real-time insulin infusions for offline reinforcement learning. PhysioNet.

Frost, T., Vaidya, H. & Harris, S. (2026). The hidden risks of temporal resampling in clinical reinforcement learning. Preprint arXiv:2602.06603.

Frost, T., Li, K. & Harris, S. (2025). Robust real-time mortality prediction in the intensive care unit using temporal difference learning. In: Proceedings of the 4th Machine Learning for Health Symposium, PMLR, pp. 350–363.

Ellershaw, S., Tomlinson, C., Burton, O.E., et al. (2024). Automated generation of hospital discharge summaries using clinical guidelines and large language models. In: AAAI 2024 Spring Symposium on Clinical Foundation Models.

Collins, D.R.J., Jobanputra, K., **Frost, T.**, et al. (2017). Cardiovascular disease risk and prevention amongst Syrian refugees: Mixed methods study of Médecins Sans Frontières programme in Jordan. Conflict and Health, 11(1), 14.

Frost, T., Sinha, D. & Gilbert, B.J. (2014). Should assisted dying be legalised?. Philosophy, Ethics, and Humanities in Medicine, 9(1), 3.