Alec Sargood

Computer Vision and Generative AI Researcher

Website Email LinkedIn GitHub

PROFESSIONAL SUMMARY

Generative-modelling and computer vision PhD researcher. I focus on diffusion and flow-matching models for data synthesis tasks, image-to-image generation, and guidance techniques for controllable generation. Research intern at InstaDeep.

SKILLS

- **Core AI Research:** Generative Models (Flow and Stochastic Interpolant Models), Probabilistic ML, Reinforcement Learning, Computer Vision, Information Theory, Stochastic Calculus.
- **Languages:** Python, Julia, MATLAB, R.
- **Engineering Stack:** PyTorch, Hugging Face Diffusers, Distributed Training, HPC environments.

EXPERIENCE

PhD Research Intern May 2026 – November 2026

InstaDeep — Generative AI team

- Researching flow-based generative models and guidance mechanisms for drug discovery applications.

EDUCATION

PhD in Computer Science 2023 – Present

University College London, Hawkes Institute

- Developing diffusion and flow-matching models for medical image synthesis, cross-modality translation, and global tractography.
- Published at CVPR 2026 (Highlight), AAAI 2026, and CGMMI @ ICIAP 2025.

MRes in Sensor Technologies and Applications 2022 – 2023

University of Cambridge

- Focus on probabilistic machine learning, computer vision, and information theory.

MSc in Mathematical Modelling and Scientific Computing 2020 – 2021

University of Oxford

- Advanced training in PDEs, optimization, dynamical systems, and numerical analysis.

BSc (Hons) in Mathematics 2017 – 2020

University of Exeter

- Specialization in applied and computational mathematics.

SELECTED PUBLICATIONS

GenTract: Generative Global Tractography

Sargood, A., Puglisi, L., Thompson, E., Musolesi, M., Alexander, D.C.

CVPR 2026 HIGHLIGHT [Paper] [Project] [Code]

CoCoLIT: ControlNet-Conditioned Latent Image Translation for MRI to Amyloid PET Synthesis

Sargood, A., Puglisi, L., Cole, J.H., Oxtoby, N.P., Ravì, D., Alexander, D.C.

AAAI 2026 [Paper] [Project] [Code]

Connectomics Informed by Large Language Models

Thompson, E., He, T., Schroder, A., Abdulaal, A., Sargood, A., Soskic, S., Tregidgo, H.F.J., Alexander, D.C.

arXiv 2511.05383 (2025) [Paper]

Benchmarking GANs, Diffusion Models, and Flow Matching for T1w-to-T2w MRI Translation

Moschetto, A., Puglisi, L., Sargood, A., Dell'Acqua, P., Guarnera, F., Battiato, S., Ravì, D.

CGMMI @ ICIAP 2025 [Paper]

Fixed and Distributed Gene Expression Time Delays in Reaction–Diffusion Systems
Sargood, A., Gaffney, E.A., Krause, A.L.
Bull. Math. Biol. 84, 98 (2022) **[Paper]**

HONOURS & SELECTIVE PROGRAMS

- **CVPR 2026 Highlight** — GenTract selected as a highlight paper.
- **International Computer Vision Summer School (ICVSS) 2026** — Accepted attendee, Sicily.

PROJECTS & OPEN SOURCE

- **GenTract:** Official implementation of the first generative model for global tractography (CVPR 2026 Highlight). (Project Page · GitHub)
- **CoCoLIT Framework:** 3D Conditional Latent Diffusion Model for image-to-image translation (AAAI 2026). (Project Page · GitHub)
- **Consistency Models:** Open-source implementation of scalable consistency models for the MNIST dataset. (GitHub)
- **Reaction–Diffusion Solver:** High-performance package in MATLAB and Julia for solving stiff PDE systems. (GitHub)

OTHER EXPERIENCE

Project Supervisor, UCL MedICSS Summer School July 2025
Hawkes Institute, University College London

- Co-supervised a student project on diffusion models for synthetic FDG-PET image generation, applying transfer learning from MRI-trained models with class-conditioning over diagnostic labels (Control, MCI, AD).

Mathematics Mentor Oct 2023 – July 2025
Rossetti Academic / King's College School

- Delivered extra-curricular lectures on advanced topics and supervised applied mathematics projects.

Computational Research Assistant Mar 2022 – Mar 2023
University of Cambridge, MRC Cognition and Brain Sciences Unit

- Modelled transcranial ultrasound wave propagation to optimize neuromodulation stimuli.