

Dr Athanasios Vrontzos

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WORK EXPERIENCE

Monzo Bank

Lead AI ML Scientist

London, UK

June 2025 - Present

- Led the definition and execution of the AI roadmap for Search and Personalisation, aligning cross-functional teams across ML, engineering, and product to deliver unified, intelligent search and personalised experiences with measurable impact.

Spotify

Research Scientist – Advanced Causal Inference & Machine Learning

London, UK

August 2022 - June 2025

- Led the development of novel targeting algorithms **improving key advertising metrics by > 30%** with equal improvement in **revenue** from specific advertising products.
- Analysis supported major company negotiations and unlocked new revenue generating avenues. Insights led to **saving** more than **2M USD per year** and were quoted in 2023 Stream ON keynote event.
- Research published in **Nature Machine Intelligence**, featured in MIT Technology review and praised publicly by **Bill Gates and Turing award recipient, Judea Pearl**.
- Managed a total of 11 interns

Imperial College London

Visiting Researcher

London, UK

August 2022 – April 2025

- Co-advising three PhD students in collaboration with two academic staff members
- Work includes GenAI for text-to-video generation, efficient LLM training and causal discovery

Zeit Medical

Artificial Intelligence Lead

Palo Alto, CA (remote)

October 2019 - August 2022

- Spearheaded** development of real time stroke detection algorithms.
- Designed entire company AI pipeline from data curation to serving.
- Principal technology advisor to CEO, aided hiring of CTO

Apple

Machine Learning Research Scientist - Internship

Cambridge, UK

August 2020 – November 2020

- Part of Interactive Intelligence team, worked on **large language models (LLMs)** for word sense disambiguation
- Decreased computational resources required by 90%** while maintaining state of the art performance

NASA Frontier Development Lab

Artificial Intelligence Researcher - Internship

Mountain View, CA

June 2019 - August 2019

- Led AI development in team of 4 researchers.
- Developed state of the art algorithms for multi-modal data for accurate prediction of GNSS interference at least 1 hour in advance

Imperial College London

Teaching Scholar

London, UK

October 2018 – August 2022

- Teaching scholar for the department of Computing. Responsible for course material creation, guest lecturing and lab demonstrations.
- Co-Supervised 2 Master's Thesis of students on Master's in Engineering in Computer Science

General Electric Healthcare

Computer Vision Researcher - Internship

Île-de-France, FR

April 2017 – October 2017

- Worked in Interventional Radiology applications for localization and classification of medical devices in X-Ray Fluoroscopy.

EDUCATION

PhD in Artificial Intelligence – Machine Learning

Imperial College London

London, UK

October 2018 – August 2022

- Advisors: Prof. B. Kainz and Prof. D. Rueckert, part of the Biomedical Image Analysis Group
- Focus on computer vision and causality in medical imaging. Led to more than 20 first authored and co-authored papers.

M. Eng (incl. B. Eng) in Electrical and Electronic Engineering

Imperial College London

London, UK

October 2014 – August 2018

- 1st class honors; GPA 4.0

D2 Fellowship of the Higher Education Academy (FHEA)

Imperial College London

London, UK

October 2020 – August 2021

SKILLS & INTERESTS

Skills: Python, Tensorflow, Pytorch, Keras, Machine Learning, Computer Vision, Leadership, Research, MS Office, Linux, Causal Inference, Communication, Large Language Models (LLM), Transformers, Diffusion Models

Languages: *Fluent:* English, Greek, *B2 level:* French, *A2 Level:* Spanish, Portuguese

Causal Inference

- [1] **A. Vrontzos**, B. Kainz, and C. M. Gilligan-Lee, “Estimating categorical counterfactuals via deep twin networks”, *Nature Machine Intelligence*, pp. 1–10, 2023.
- [2] J. Zeitler, **A. Vrontzos**, and C. M. Gilligan-Lee, “Non-parametric identifiability and sensitivity analysis of synthetic control models”, in *Conference on Causal Learning and Reasoning*, PMLR, 2023,
- [3] H. Reynaud, **A. Vrontzos**, M. Dombrowski, C. Gilligan Lee, A. Beqiri, P. Leeson, and B. Kainz, “D’artagnan: Counterfactual video generation”, in *International Conference on Medical Image Computing and Computer-Assisted Intervention*, 2022

Computer Vision

- [1] **A. Vrontzos** and K. Mikolajczyk, “Deep segmentation and registration in x-ray angiography video”, in *BMVC 2018*, 2018.
- [2] L. Schmidtke, **A. Vrontzos**, S. Ellershaw, A. Lukens, T. Arichi, and B. Kainz, “Unsupervised human pose estimation through transforming shape templates”, in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2021, pp. 2484–2494.
- [3] H. Reynaud, **A. Vrontzos**, B. Hou, A. Beqiri, P. Leeson, and B. Kainz, “Ultrasound video transformers for cardiac ejection fraction estimation”, in *Medical Image Computing and Computer Assisted Intervention–MICCAI 2021: 24th International Conference, Strasbourg, France, September 27–October 1, 2021, Proceedings, Part VI 24*, Springer International Publishing, 2021, pp. 495–505.
- [4] L. Schmidtke, B. Hou, **A. Vrontzos**, and B. Kainz, “Self-supervised 3d human pose estimation in static video via neural rendering”, in *European Conference on Computer Vision*, Springer Nature Switzerland Cham, 2022, pp. 704–713.

Reinforcement Learning

- [1] **A. Vrontzos**, A. Alansary, K. Kamnitsas, D. Rueckert, and B. Kainz, “Multiple landmark detection using multi-agent reinforcement learning”, in *Medical Image Computing and Computer Assisted Intervention–MICCAI 2019: 22nd International Conference, Shenzhen, China, October 13–17, 2019*,
- [2] A. Alansary, O. Oktay, Y. Li, L. Le Folgoc, B. Hou, G. Vaillant, K. Kamnitsas, **A. Vrontzos**, B. Glocker, B. Kainz, et al., “Evaluating reinforcement learning agents for anatomical landmark detection”, *Medical image analysis*, vol. 53, pp. 156–164, 2019.
- [3] T. Liu, Q. Meng, J.-J. Huang, **A. Vrontzos**, D. Rueckert, and B. Kainz, “Video summarization through reinforcement learning with a 3d spatio-temporal u-net”, *IEEE transactions on image processing*, vol. 31, pp. 1573–1586, 2022.

Medical Imaging & Other Deep Learning Topics

- [1] S. Budd, M. Sinclair, T. Day, **A. Vrontzos**, J. Tan, T. Liu, J. Matthew, E. Skelton, J. Simpson, R. Razavi, et al., “Detecting hypo-plastic left heart syndrome in fetal ultrasound via disease-specific atlas maps”, in *Medical Image Computing and Computer Assisted Intervention–MICCAI 2021: 24th International Conference, Strasbourg, France, 2021*,
- [2] K. Lamb, G. Malhotra, **A. Vrontzos**, E. Wagstaff, A. G. Baydin, A. Bhiwandiwalla, Y. Gal, A. Kalaitzis, A. Reina, and A. Bhatt, “Prediction of gnss phase scintillations: A machine learning approach”, in *Machine Learning for the Physical Sciences; NeurIPS 2019 workshop*,
- [3] **A. Vrontzos**, Y. Cao, L. Schmidtke, B. Kainz, and A. Monod, “Topological data analysis of database representations for information retrieval”, *Information and Inference: A Journal of the IMA*, 2023