

EDUCATION

Ph.D. in Machine Learning Imperial College London ; BioMedIA group, Advisors: Prof. B. Kainz, Prof. D. Rueckert Causality and Computer Vision in Medical Imaging;	London, UK 2018–2022
M.Eng.(incl. B.Eng) in Electrical and Electronic Engineering Imperial College London , Degree: 1st Class GPA: 4.00/4.00	London, UK 2014–2018
D2 Fellowship of the Higher Education Academy (FHEA) Imperial College London ; As part of the Postgraduate Certificate in University Learning and Teaching	London, UK 2020–2021

EXPERIENCE

Spotify Machine Learning Research Scientist - Full Time Advanced Causal Inference Lab; Explored causal impact of user and artist actions on artist's careers. Supported negotiations and decisions saving more than 2M USD per year; Work was quoted in Stream On 2023 keynote event.	London, UK Aug '22–Present
Apple Machine Learning Research Scientist - Internship Interactive Intelligence Team - worked on word sense disambiguation	Cambridge, UK Aug '20–Nov '20
Zeit Medical AI Research Consultant Advisor to the CEO, Led team on machine learning research for identifying stroke events	Palo Alto, CA, USA Oct '19 –Aug '22
NASA Frontier Development Lab AI Research Scientist- Internship AI Research Scientist developing solutions for enhance predictability of GNSS disturbances	Mountain View, CA, USA Jun '19 –Aug '19
Imperial College London Teaching Scholar Teaching Scholar for the Dept. of Computing. Responsible for course material creation, guest lecturing, lab demonstrations	London, UK 2018–2022
General Electric Healthcare Computer Vision Researcher- Internship Worked Interventional Radiology Applications - localization and classification of medical devices in X-Ray Fluroscopy	Buc, FR Apr '2017–Oct '17
Imperial College London Undergraduate Researcher Machine Learning Undergraduate Researcher with Prof. Erol Gelenbe	London, UK Jul '2016–Oct '16

SCHOLARSHIPS AND AWARDS

- **NVIDIA GPU Sponsorship** 2020
- **NASA FDL Unexpected Discovery Award** 2019
Demonstrated correlation between dynamic auroral structures and GNSS phase scintillations using ML
- **Travel Award - ML4PS workshop NeurIPS, Vancouver, BC, CA** 2019
- **Travel Award - IJCNN, Anchorage, AK, USA** 2017

SKILLS

- **Computing:** Python; Tensorflow; Pytorch; Keras; Caffe; C++; HTML; Machine Learning, Computer vision; Causal Inference
- **OS:** Linux; Mac OSX; MS Windows
- **Memberships:** IEEE, IET, MICCAI student member

TEACHING

- **Computer Vision** Imperial College London 2018-2020
Course Code (DOC316/315)
- **Machine Learning for Imaging** Imperial College London 2018-2020
Course Code (DOC416)
- **Natural Language Processing** Imperial College London 2019
Course Code (DOC490H)
- **Deep Learning** Imperial College London 2020
Course Code (DOC460)
- **Computer Graphics** Imperial College London 2019
Course Code (DOC317)

PROJECTS

- **Reinforcement Learning in Medical Imaging** Novel RL techniques for MRI and US Imaging
Led to 3 MICCAI Papers 2018 –Present
- **Causal Reasoning in ML** Novel Causal ML techniques for Computer Vision and Medical Applications 2020 – Present

LANGUAGES

- **English:** Bilingual
- **Greek:** Bilingual
- **French:** B2 Level
- **Spanish:** A2 Level
- **Portuguese:** A2 Level

EXTRACURRICULAR ACTIVITIES

- **Station Manager** 2018–2019
Imperial College Radio
- **Head of Music** 2018–2018
Imperial College Radio
- **Year Representative** 2018–2022
PhD Year Representative
- **European Union Science Olympiad** 2012-2013
Team of 3; Competed in Physics, Chemistry and Biology Lab Test; 1st place regional level; 5th place National level
- **Debating Team** 2009-2014
Debater, participated in multiple national competitions

- [1] L. Schmidtke, B. Hou, **A. Vlontzos**, and B. Kainz, “Self-supervised 3d human pose estimation in static video via neural rendering”, in *Computer Vision–ECCV 2022 Workshops: Tel Aviv, Israel, October 23–27, 2022, Proceedings, Part III*, Springer Nature Switzerland Cham, 2023, pp. 704–713.
- [2] **A. Vlontzos**, B. Kainz, and C. M. Gilligan-Lee, “Estimating categorical counterfactuals via deep twin networks”, *Nature Machine Intelligence*, pp. 1–10, 2023.
- [3] J. Zeitler, **A. Vlontzos**, and C. M. Gilligan-Lee, “Non-parametric identifiability and sensitivity analysis of synthetic control models”, *arXiv preprint arXiv:2301.07656*, 2023.
- [4] M. Baugh, J. Tan, **A. Vlontzos**, J. P. Müller, and B. Kainz, “Nnood: A framework for benchmarking self-supervised anomaly localisation methods”, in *Uncertainty for Safe Utilization of Machine Learning in Medical Imaging: 4th International Workshop, UNSURE 2022, Held in Conjunction with MICCAI 2022, Singapore, September 18, 2022, Proceedings*, Springer Nature Switzerland Cham, 2022, pp. 103–112.
- [5] C. Lebbos, J. Barcroft, J. Tan, J. Müller, M. Baugh, **A. Vlontzos**, S. Saso, and B. Kainz, “Adnexal mass segmentation with ultrasound data synthesis”, in *Simplifying Medical Ultrasound: Third International Workshop, ASMUS 2022, Held in Conjunction with MICCAI 2022, Singapore, September 18, 2022, Proceedings*, Springer International Publishing Cham, 2022, pp. 106–116.
- [6] T. Liu, Q. Meng, J.-J. Huang, **A. Vlontzos**, 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.
- [7] H. Reynaud, **A. Vlontzos**, M. Dombrowski, C. Gilligan Lee, A. Beqiri, P. Leeson, and B. Kainz, “D’artagnan: Counterfactual video generation”, in *Medical Image Computing and Computer Assisted Intervention–MICCAI 2022: 25th International Conference, Singapore, September 18–22, 2022, Proceedings, Part VIII*, Springer Nature Switzerland Cham, 2022, pp. 599–609.
- [8] **A. Vlontzos**, “Towards autonomous diagnostic systems with medical imaging”, 2022.
- [9] **A. Vlontzos**, H. Reynaud, and B. Kainz, “Is more data all you need? a causal exploration”, *arXiv preprint arXiv:2206.02409*, 2022.
- [10] **A. Vlontzos**, D. Rueckert, and B. Kainz, “A review of causality for learning algorithms in medical image analysis”, *MELBA*, 2022.
- [11] S. Budd, M. Sinclair, T. Day, **A. Vlontzos**, 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, September 27–October 1, 2021, Proceedings, Part VII 24*, Springer International Publishing, 2021, pp. 207–217.
- [12] H. Reynaud, **A. Vlontzos**, 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.
- [13] L. Schmidtke, **A. Vlontzos**, 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.
- [14] G. Sutherland, F. Soboczenski, and **A. Vlontzos**, “A deep reinforcement learning approach to train autonomous space debris remediation spacecraft”, *43rd COSPAR Scientific Assembly. Held 28 January–4 February*, vol. 43, p. 2207, 2021.

- [15] **A. Vlontzos**, Y. Cao, L. Schmidtke, B. Kainz, and A. Monod, “Topological data analysis of database representations for information retrieval”, *arXiv preprint arXiv:2104.01672*, 2021.
- [16] **A. Vlontzos**, G. Sutherland, S. Ganju, and F. Soboczenski, “Next-gen machine learning supported diagnostic systems for spacecraft”, in *International Workshop on AI for Spacecraft Longevity at IJCAI*, arXiv preprint arXiv:2106.05659, 2021.
- [17] T. Liu, Q. Meng, **A. Vlontzos**, J. Tan, D. Rueckert, and B. Kainz, “Ultrasound video summarization using deep reinforcement learning”, in *Medical Image Computing and Computer Assisted Intervention–MICCAI 2020: 23rd International Conference, Lima, Peru, October 4–8, 2020, Proceedings, Part III 23*, Springer International Publishing, 2020, pp. 483–492.
- [18] G. Sutherland, F. Soboczenski, and **A. Vlontzos**, “Utilizing deep reinforcement learning to effect autonomous orbit transfers and intercepts via electromagnetic propulsion”, 2020.
- [19] **A. Vlontzos**, S. Budd, B. Hou, D. Rueckert, and B. Kainz, “3d probabilistic segmentation and volumetry from 2d projection images”, in *The Second International Workshop on Thoracic Image Analysis*, 2020, arXiv–preprint.
- [20] **A. Vlontzos**, H. B. Rocha, D. Rueckert, and B. Kainz, “Causal future prediction in a minkowski space-time”, *arXiv preprint arXiv:2008.09154*, 2020.
- [21] A. Alansary, O. Oktay, Y. Li, L. Le Folgoc, B. Hou, G. Vaillant, K. Kamnitsas, **A. Vlontzos**, B. Glocker, B. Kainz, *et al.*, “Evaluating reinforcement learning agents for anatomical landmark detection”, *Medical image analysis*, vol. 53, pp. 156–164, 2019.
- [22] B. Hou, **A. Vlontzos**, A. Alansary, D. Rueckert, and B. Kainz, “Flexible conditional image generation of missing data with learned mental maps”, in *International Workshop on Machine Learning for Medical Image Reconstruction, MICCAI 2019*, 2019, arXiv–1908.
- [23] K. Lamb, G. Malhotra, **A. Vlontzos**, E. Wagstaff, A. G. Baydin, A. Bhiwandiwalla, Y. Gal, A. Kalaitzis, A. Reina, and A. Bhatt, “Correlation of auroral dynamics and gnss scintillation with an autoencoder”, in *Machine Learning for the Physical Sciences; NeurIPS 2019 workshop*, arXiv:1910.03085, 2019.
- [24] K. Lamb, G. Malhotra, **A. Vlontzos**, 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*, <https://arxiv.org/pdf/1910.01570>, 2019.
- [25] G. Malhotra, **A. Vlontzos**, K. Lamb, E. Wagstaff, and A. Bhatt, “A deep-learning based approach for predicting high latitude ionospheric scintillations using geospace data and auroral imagery”, in *AGU Fall Meeting Abstracts*, vol. 2019, 2019, NG21A–08.
- [26] **A. Vlontzos**, 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, Proceedings, Part IV 22*, Springer International Publishing, 2019, pp. 262–270.
- [27] **A. Vlontzos** and K. Mikolajczyk, “Deep segmentation and registration in x-ray angiography video”, in *BMVC 2018*, 2018.
- [28] **A. Vlontzos**, “The rnn-elm classifier”, in *IJCNN 2017*, 2017.