Dr. Gerald Laura-Moore

Doctorate in Neurotechnology | Data Scientist | Machine Learning Engineer | Developer | Researcher

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Profile

Senior Machine Learning (ML) Engineer with expertise encompassing computer vision, time-series analysis, agentic AI systems, and production ML systems. High impact experience in developing ML solutions for a variety of tasks and scaling from research to production systems. Domain expertise in geospatial remote sensing, neuroscience and astrophysics. Passionate about building innovative solutions and expanding my knowledge in an environment that encourages learning and discovery.

Experience

Dec 2022 - present

Senior Machine Learning Engineer | ***Agreena, Copenhagen, DK***

- Senior technical lead for ML engineering and Data Science, creating and scaling remote sensing models from research to production.
- Led development across several agricultural ML projects: land parcel detection (FracTAL ResUNet), crop sizing and health analysis (Mask R-CNN), and agicultural management detection from time-series (LSTM, Transformers, CatBoost) and images (EfficientNet).
- Solo initiative and development of a geospatial foundation embedding distillation model to optimise and standardise ML pipelines.
- Led and developed agentic AI ecosystems including user-facing chatbot with custom MCPs and tooling, and a VLM-based (PaliGemma) image report generation system fine-tuned on proprietary data.
- Led and developed automated data scraping and labelling systems leveraging Google Street View imagery.
- Built production pipelines using Ray, FastAPI, AnyScale and Airflow, driven by KPIs for accuracy, throughput and resource utilisation.
- Developed Python SDK and data ingestion service for STAC catalogues and API access, driving efficiency across Data and Engineering teams.
- Addressed ground truth data constraints through PCA, manifold learning, K-fold cross-validation, auxillary learning, transfer learning and ensemble modelling architectures.
- Recognised by CEO and senior leadership for driving value and delivering results with significant contribution to company direction.
- Authored publications, presented at conferences and delivered technical presentations to stakeholders and customer prospects.
- Led hiring and served as go-to-trustee within the team to help address complex challenges.

Jan 2021 - Dec 2022

Data Scientist | ***Hummingbird Technologies, London, UK***

- Nutured key client partnerships by researching and developing new customer driven solutions, including instance segmentation approach for high resolution object detection in agricultural fields, and an attention based semantic segmentation model for delineating agricultural parcels at scale.
- Led grant-funded research with documentation for research awards and conference presentations.

Oct 2016 - Jan 2021

Ph.D Neurotechnology | ***Imperial College London, London, UK***

- Sole ownership and development of an end-to-end analysis pipeline for multi-terabyte image data, including CNN classification through custom or adapted architectures (VGG Net, Google Inception), semantic segmentation (UNet, UNet++), image registration (Elastix, aMAP, ANTs) and dashboard visualisations (Plotly, Dash, Heroku).
- Applied pipeline to investigate neuronal connectivity and structural changes under Alzheimers and Huntingtons pathology.
- Presented research through publications, conferences, and workshops.

Projects

BinOcular

- Self driven development of a Python package that clusters camera photographs based on feature similarity and temporal thresholding.
- Uses a pre-trained EfficientNet model to compress imagery into a latent feature space, and subsequently uses a cosine-similarity metric and temporal thresholding to group images into *similar* clusters based on shared features within images.

Kern

- A custom personal assistant using the Pydantic AI agentic framework.
- Uses custom function tools to add functionality such as natural-language text to SQL for database querying, English/Italian tutoring, and general purpose AI chatbot.

Education

2015 - 2016 | MRes Neurotechnology | Imperial College London, UK

2011 - 2015 | MPhys in Physics and Astrophysics | University of Sussex, UK

2009 - 2011 | A-levels including Mathematics, Physics and Computing | Furze Platt Sixth Form College, UK

2007 - 2009 | Thirteen GCSEs including Mathematics, Physics and Biology | Furze Platt Senior School, UK

Technical Skills

Languages | Python, C++, JAVA, MATLAB, Rust

Libraries | PyTorch, Tensorflow, Keras, Ray, Scikit-learn, Scipy, OpenCV, Pydantic, Pydantic AI, LangChain/Graph, Pytest

Databases | STAC, MySQL, PostgreSQL

Software | AnyScale, Docker, Git, CircleCI, Poetry, GCP, Vertex AI, ImageJ/Fiji, Blender, Adobe Suite

Publications

2025

Longitudinal testing of exploratory behaviour in mice reveals stable cognitive traits across the adult lifespan | Rushdie Abuhamdah, Gerald Moore, Deyl Djama, Florian Zirpel, Chris Edge, Abdel Ennaceur, Paul Chazot, Diana Cash, Eugene Kim, Anthony Vernon, Paul Chadderton, Stephen Brickley. Aging Cell. 10.1111/acel.70287.

2025

Hierarchical Bayesian modeling of multi-region brain cell count data | Sydney Dimmock, Benjamin MS Exley, Gerald Moore, Lucy Menage, Alessio Delogu, Simon R Schultz, E Clea Warburton, Conor Houghton, Cian ODonnell. eLife Neuroscience. 10.7554/eLife.102391.1.

2024

Detecting cover crop activity at scale using fusion of multiple satellite sources | Gerald Moore, Edward Dowling, Gabor Szakacs, Daniel Szponar. Remote Sensing [to be submitted].

2024

Tracking tillage practices across Europe using multi-source Earth observations & machine learning | Nicholas Synes, Aoife Whelan, Edward Dowling, Francois Lemarchand, Khushboo Jain, Ben Smith, Gerald Moore, Peter Kongstad, Blayne Lees, Vincent Cornwell, Nathan Torbick. IEEE IGARSS.

2024

The type of inhibition provided by thalamic interneurons alters the input selectivity of thalamocortical neurons | Stephen Brickley, Deyl Djama, Florian Zirpel, Zhiwen Ye, Gerald Moore, Charmaine Chue, Christopher Edge, Polona Jager, Alessio Delogu. bioRxiv. 10.1016/j.crneur.2024.100130.

2021

Dual midbrain and forebrain origins of thalamic inhibitory interneurons | Polona Jager, Gerald Moore, Padraic Calpin, Xhuljana Durmishi, Yoshiaki Kita, Irene Salgarella, Yan Wang, Simon R. Schultz, Stephen Brickley, Tomomi Shimogori, Alessio Delogu. Elife. 10.7554/eLife.59272.

2020

Cell counting in targeted nuclei of whole brain two-photon image data | Gerald Moore, Polona Jager, Alessio Delogu, Simon Schultz, Stephen Brickley. Biophotonics Congress: Biomedical Optics Congress 2018 (Microscopy/Translational/Brain/OTS), OSA Technical Digest (Optical Society of America, 2018). 10.1364/TRANSLATIONAL.2018.JTu3A.48.

Conferences & Workshops

2022

Living Planet Symposium | Presented FracTAL ResUNet for field boundary detection and Mask R-CNN for crop counting in drone imagery.

2019

British Neuroscience Association | Presented U-Net based cell counting and distribution analysis method for whole mouse brain microscopy data. Presented longitudinal research of cognitive decline in female mice and its association with brain ageing.

London Neurotechnology Network Imaging Workshop | Presented high-resolution imaging resaerch for mapping small-scale objects across large tissue volumes.

2018

The Optical Society Annual Meeting | Presented an ML approach for cell counting in targeted nuclei of whole brain two-photon microscopy data.

Dementia Symposium ICL Alzheimers Research | Showcased research on brain pathology in response to Alzheimers and Huntingtons disease.

2017

Tissue Clearing and 3D Imaging Course | Learning tissue clearing techniques and light-sheet microscopy.

British Neuroscience Association | Presented macroscopic imaging of neuronal connectivity related to health and disease, as well as meso- and micro-scale changes in synaptic connectivity with age.