
AI RESEARCH SCIENTIST/ENGINEER

PROFILE SUMMARY

I am a self-motivated AI researcher with a PhD in Deep Learning and startup experience. In my current role, I develop data-efficient Computer Vision models, primarily based on Visual Foundation Models, which I take from research to deployment to a public SDK. I possess a strong track record of formulating and solving research and customer problems by combining theoretical knowledge with practical solutions. I am looking for opportunities to learn, grow, and deliver value in the real world. I enjoy sharing my knowledge through blog posts and educational projects.

My fascination with predictive analytics led me to pursue a career in ML/DS in 2015. Before this, I was a manager in marketing and sales at large companies, honing my managerial and customer-facing skills.

KEY SKILLS

- Deep learning, including Transformers, CNNs, and diffusion models
- Computer vision (segmentation, detection, classification, generation)
- PyTorch + ecosystem, Keras, ONNX, MLOps tools
- AWS, Git, LaTeX
- Agile project management
- Written & verbal communication, including science communication (blog, presentations) and customer engagement
- English, French: Fluent; German: Intermediate; Japanese, Italian: Beginner

WORK EXPERIENCE

AI Research Scientist (Computer Vision), Synativ – London since 07/2023

- Researched, developed, and implemented cutting-edge Computer Vision (CV) approaches for real-life applications, prioritising data efficiency. Some notable achievements include:
 - Foundation model for satellite data segmentation (GIS), 0.90 mIoU (mean intersection-over-union) with 250 labelled images.
 - Weed vs crop segmentation model from drone imagery (AgTech), high class imbalance (1% weed pixel, 20% crop pixels), 0.80 mIoU with 175 labelled images.
 - Semi-supervised rock detection from drone image (AgTech), high class imbalance (<3% of images had positive labels), noisy labels, 0.75 AP (average precision).
 - Semantic segmentation of cancer cells (6 classes) from histopathology images (BioTech), 0.7 mIoU with 150 labelled images.
 - Parameter-efficient self-supervised training of Visual Foundation Models on proprietary/domain-specific data.
- Deployed these models to Synativ's public SDK: Integration, testing, documentation, and tutorials.
- Kept up-to-date with the latest research in CV and visual foundation models.
- Contributed to strategic decision-making about target customers, product definition, and research projects.
- Worked with customers to identify use cases, propose technical solutions, and onboard them on the SDK.
- Created outreach and educational assets: Blogs, technical demos, videos, and LinkedIn posts.
- Expanded website content & functionalities: Published new doc pages, created assets, and implemented a live chat widget.

AI and Data Science Consultant, independent – London 04/2023-06/2023

- Researched and advised an investment fund on AI and data technologies in the biomedical sector.
- Performed technical due diligence on AI biotech platforms.

ML Consultant, LyRise.ai – Cairo, Egypt 01/2021-06/2023

- Led the development of ML systems from prototyping to deployable code, e.g. a financial scoring system that resulted in +60% profit/account.
- Developed pre-engagement proofs-of-concept, e.g., predicting valuable mineral deposits using GIS data.
- Drove projects with Agile methodologies: job/candidate matcher, talent assessment tests, ML Experts network.
- Successfully secured seed funding by preparing and co-presenting a pitch deck.

- Promoted the AI discourse in Egypt by hosting the regional NeurIPS 2021 chapter and moderating a panel discussion with four AI experts.
- Successfully defended LyRise before the Google for Start-Ups Accelerator Africa 2022 selection committee.
- After my move to London (08/2022), I became an AI Advisor to LyRise while refocusing on my PhD thesis.

Adjunct Professor, School of IT, New Giza University – Egypt 05/2021-03/2022

- Designed and developed a comprehensive Introduction to Data Science course from the ground up.
- Effectively taught the curriculum to second-year students.
- Received a renewal proposal from the university for the 22-23 academic year (unable to accept due to my relocation to the UK).

Guest Lecturer – MSc Artificial Intelligence, University of Aberdeen – UK 11/2018-07/2020

- Developed and presented lectures on Automated Machine Learning and Neural Architecture Search.
- Mentored and inspired two MSc students to specialise in these areas and supervised their work.

Data Science Consultant, Freelance – Bucharest, Romania 03/2016-08/2017

- Provided consultancy services to local and international companies.
- Contributions include a financial predictive model that improved the F1-score by +10 points over baseline.
- Delivered a lecture to 130 Orange Labs Romania engineers, initiating the company's adoption of Deep Learning.

Aftermarket Director – JCB (Construction Machinery) – Paris, France 01/2013-08/2015

- Grew market penetration by 10% on parts, +100% on attachments.
- Supervised the market side of an SAP transition, supporting customer satisfaction through it.

Ford Motor Company (Automotive) – Paris, France & Brentwood, UK 01/2001-12/2012

- Held six roles in Planning, Sales, and Marketing (France and the UK).
- Successfully launched three new vehicles in two years.

EDUCATION

PhD Student, Heriot-Watt University (Edinburgh) and University of Aberdeen – Part-time 05/2018-07/2023

- Developed an innovative Neural Ensemble Search method using an autoencoder + performance predictor.
- Utilised evolutionary algorithms to design state-of-the-art deep learning models for computer vision applications.
- Secured a £12K NHS endowment for research into DL applied to retinal scans of patients with diabetes.

MSc in Marketing, highest honours – HEC Paris Business School 1999-2000

MSc Hons ("Diplôme d'Ingénieur") in Mechanical Engineering – Ecole Centrale de Nantes 1996-1999

Summer Schools:

- Lisbon Machine Learning School: Large language models (LLM), reinforcement learning (RL). 08/2020
- PRAIRIE AI Summer School, Paris: Robotics, self-supervised learning, RL. 10/2019
- Eastern European Machine Learning Summer School 2019, Bucharest: Deep RL, LLMs, CV. 07/2019

SELECTED PROJECTS

- Selected portfolio, plus:
- Deep imitation learning in a 3D driving simulator using a CNN (code, video)
- Vehicle tracking with an extended Kalman filter
- Vehicle detection and tracking from camera images
- Next word predictor application for short messaging

ARTICLES, PUBLICATIONS, ETC.

- Blog articles on Medium
- Neural Architecture Search for Retinal Scan Analysis, with NHS Grampian – WIP; £12,000 grant.
- L. Frachon, "Novel Approaches in Macro-level Neural Ensemble Architecture Search", PhD thesis.
- L. Frachon, W. Pang, G. Coghill, "An Immune-Inspired Approach to Macro-Level Neural Ensemble Search", oral presentation at IEEE CEC 2021 (Krakow, July 2021).
- L. Frachon, W. Pang, G. Coghill, "ImmuNeCS: Neural Committee Search by an Artificial Immune System", arXiv 1911.07729.
- L. Frachon, W. Pang, G. Coghill, "Immune-Inspired Neural Architecture Search", poster at RAAI2019 (Bucharest, June 2019). Top 5 submission.