Guillem HURAULT | Data Scientist

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⚪ ghurault • 🇫🇷 French • UK Settled Status

Data Scientist with a **PhD in Statistical Machine Learning**. Deep expertise in **Bayesian modelling** and **time-series forecasting**. Research and industry experience in healthcare, sports analytics and the energy sector.

Professional Experience

Aug. 2024 – Today

Senior Data Scientist, *CFP Energy*, London, UK
Developed statistical and machine learning models to forecast electricity demand.

Sept. 2022 – Aug. 2024

Data Scientist, *Pythia Sports*, London, UK
- Conducted statistical modelling research for a sports betting pipeline, incl.: Bayesian predictive modelling, bet optimisation under uncertainty, time-series forecasting of prices, 2D markerless pose estimation in videos.
- Managed and maintained the model for a complete betting market.
- Maintained, refactored and wrote technical documentation for our internal Python modelling packages.

Oct. 2017 – Sept. 2022

Imperial College London (Department of Bioengineering), UK
Research Associate (Jun. 2022 - Sept. 2022) – **Research Assistant (Oct. 2017 - May 2022)**
- Analysed real-world and clinical trial patient data with state-of-the-art Bayesian models for time-series forecasting, to predict the evolution of eczema severity and generate personalised treatment recommendations.
- Published 10+ scientific articles to clinical and machine learning audiences. Developed software packages (EczemaPred, HuraultMisc). Presented work at international conferences. Reviewed several research papers.
- Supervised 25+ student projects, conducted interviews, managed internal packages, knowledge base and website.

2019 – 2021

Teaching Assistant, *Imperial College London (Department of Bioengineering)*, UK, part-time
- Probability & Statistics - Mathematics - Occasional teaching in Machine Learning and Brain Machine Interfaces.

May 2016 – July 2016

Research Intern, *Laboratoire de Neurosciences Cognitives (CNRS UMR 7291), Aix-Marseille Université*, France
Analysed fMRI images using Machine Learning to understand the role of the oculomotor cortex in social perception.

Education

2018–2022

PhD in Statistical Machine Learning, *Imperial College London (Department of Bioengineering)*, UK
Thesis: Towards a data-driven personalised management of Atopic Dermatitis severity. Supervisor: Prof. Tanaka.

2016–2017

MSc in Biomedical Engineering, Neurotechnology, *Imperial College London*, UK, Distinction

2014–2018

Master's Degree in Engineering, *Ecole Centrale de Lyon*, one of France's top engineering schools

2014–2016

Bachelor's Degree in Economics, *Université Lyon 2*, France

Skills

Languages
- Native **French** - Fluent **English** - Conversational Portuguese

Data Science
- Machine Learning - Statistics - Bayesian modelling - Time-series forecasting - Uncertainty quantification - Visualisation - Missing values - Regularisation - Decision analysis - Clustering

Programming
Working knowledge: - Ⓡ R (incl. tidyverse, Rmarkdown/Quarto, Shiny) - 🐍 Python (incl. pandas, numpy, scikit-learn, scipy, ArviZ, DeepLabCut) - Ⓢ Stan - LaTeX - RegEx - Git - SQL - Conda

Basic knowledge: - 🔺 MATLAB - C# (incl. Infer.NET) - Docker - HTML - FFmpeg - bash - Tableau

Software Engineering
- Package development - Object-Oriented Programming - CI / CD - Testing - Refactoring - Technical documentation - Version control

Other Experiences

2019 – 2021   **Bioengineering PhD representative**, *Imperial College London*

Represented 200+ PhD researchers in departmental meetings, organised social and professional events.

2014-2017   **Engineering student**

- Investigated the evolution of eczema using Machine Learning methods in the Biological Control Systems Lab.
- Designed a genetic algorithm in a research project with LIRIS Lab (CNRS) to solve a scheduling problem.
- Supervised a 6-person team for HEXADRONE to design and test a security system to prevent a drone crash.

2015   **General Secretary**, *Forum Perspectives*

Organized a yearly career fair with 100 companies, 2000 students participating and a turnover of 250k€.

2015   **Treasurer, Communication coordinator and Editor** of Centrale Lyon's newspaper Piston Hebdo.

2015   Active committee member of Centrale Lyon's Cinema Society.

Selected Publications

- **G. Hurault**, J-F. Stalder, M. Saint Aroman, and R. J. Tanaka, "Data-driven personalised recommendations for eczema treatment using a Bayesian model of severity dynamics", *medRxiv*, 2024

- A. Duverdier*, **G. Hurault***, K. Thomas, A. Custovic and R. J. Tanaka, "Evaluation of measurement errors in the Patient-Oriented Eczema Measure (POEM) outcome", *Clinical & Experimental Allergy*, vol. 54, no. 3, p. 207-215, 2024

- **G. Hurault**, K. Pan, R. Mokhtari, B. Olabi, E. Earp, L. Steele, H. C. Williams and R. J. Tanaka, "Detecting eczema areas in digital images: an impossible task?", *JID Innovations*, vol. 2, no. 5, p. 100133, 2022

- **G. Hurault**, J-F. Stalder, S. Mery, A. Delarue, M. Saint Aroman, G. Josse and R. J. Tanaka, "EczemaPred: A computational framework for personalised prediction of eczema severity dynamics", *Clinical and Translational Allergy*, vol. 12, no. 3, p. e12140, 2022.

- **G. Hurault**, E. Roekevisch, M.E. Schram, K. Szegedi, S. Kezic, M.A. Middelkamp-Hup, P.I. Spuls and R. J. Tanaka, "Can serum biomarkers predict the outcome of systemic immunosuppressive therapy in adult atopic dermatitis patients?", *Skin and Health Disease*, vol. 2, no. 1, p. e77, 2022.

- **G. Hurault**, V. Delorieux, Y-M. Kim, K. Ahn, H. C. Williams and R. J. Tanaka, "Impact of environmental factors in predicting daily severity scores of atopic dermatitis", *Clinical and Translational Allergy*, vol. 11, no. 2, 2021.

- K. Pan, **G. Hurault**, K. Arulkumaran, H. C. Williams and R. J. Tanaka, "EczemaNet: Automating Detection and Assessment of Atopic Dermatitis", *International Workshop on Machine Learning in Medical Imaging*, 2020.

- **G. Hurault**, E. Domínguez-Hüttinger, S. M. Langan, H. C. Williams and R. J. Tanaka, "Personalised prediction of daily eczema severity scores using a mechanistic machine learning model", *Clinical & Experimental Allergy*, vol. 50, no. 11, pp. 1258–1266, 2020.

Full list available on my website.