Alexandre Mahrach
Machine Learning & AI Expert

CONTACT

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EDUCATION

PhD in Computational Neuroscience
Sorbonne Université
2020, Paris, France

MS in Statistical Physics
Sorbonne Université
2015, Paris, France

KEY SKILLS

Machine Learning, Predictive
Analytics, Data Mining, Artificial
Intelligence, ANN, RNN, NLP, LLM

HARD SKILLS

Python, Pandas, Scikit-learn, Numpy,
TensorFlow, PyTorch, Pylint, C++,
CUDA, Git, Spark, Docker, GCP

SOFT SKILLS

Teamwork, Leadership, Project
Management, Collaboration,
Communication, Problem-solving

LANGUAGES

French-native
Spanish-native
English-Fluent

HOBBIES

Photography
Tango
Windsurf

SUMMARY

Research Scientist with 7+ years of experience designing Machine Learning models and handling complex data. Strong communication and collaboration skills complemented by a keen interest in applying AI approaches to practical Industry settings. I am eager to leverage my expertise and drive impactful results as a Senior Data Scientist in the industry.

WORK EXPERIENCE

06/2020-Present   **Machine Learning Innovation & Team Leadership**
as a Postdoctoral Research Scientist at IDIBAPS, Barcelona, Spain

Predictive Modeling & Algorithm Development
• Led a **collaboration** with **China**'s Institute of Neuroscience, contributing to **2 publications**.
• Designed **ML models** (**Supervised classifiers**) for **sparse data analysis** (LASSO, **scikit-learn**), achieving **95% accuracy** despite dimensionality constraints.
• Built **data-driven recurrent neural networks** (RNN, **PyTorch**) for forecasting high-dimensional data (10K+) to guide instructed **decision-making**.

Data Mining & Advanced Statistical Analysis
• Fostered a **collaboration** with Vanderbilt University (**USA**) on a **data mining** project, resulting in **1 publication**.
• Implemented **regression ML models** (**Supervised Learning**) for **pattern extraction** from **big data** (**Spark**) to inform strategic decisions for project guidelines.
• Developed a **feature engineering pipeline** with **scikit-learn** for data analysis **automation**.

03/2016-03/2020   **Advanced Quantitative Research & Project Leadership**
as a Graduate Research scientist at INCC, Paris, France / Jerusalem, Israel

Machine Learning & Model Optimisation
• **Collaborated** with Janelia Research Campus (**USA**) and the Hebrew University (**Israel**) on **1 top-tier publication**.
• Developed **Deep Learning models** using **TensorFlow** for multivariate time series analysis.
• Optimized **RNN simulator** (10x in speed) via **CUDA**, facilitating large-scale computing power.

Leading Innovation & Statistical Modeling
• Developed **RNNs** in **C++**, combining **models** and **simulations** to advance **AI knowledge**.
• **Presented** findings at **2 global workshops**, fostering international knowledge exchange.
• **Mentored 2 undergraduate** researchers, **managing** their projects and **fostering** their technical proficiency.

Publications

Mahrach et al., *Attractor dynamics shapes the learning of stable working memory representations, in prep.*
Mahrach et al., *Cholinergic modulation of attractor dynamics controls working memory, J. Neurosci., under review.*
Mahrach et al., *Mechanisms underlying the response of mouse cortical networks to optogenetic manipulation, eLife, 2020.*