ALEXANDRE KAISER

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EXPERIENCE

Lead Machine Learning Engineer & Head of Insights – GatherGov Dec 2024 – Present

- Lead the full lifecycle of the company's ML-powered insights, from strategic planning to hands-on development, to deliver high-value intelligence for our clients
- Architect, build, and maintain a modular suite of AI tools that ingests 30,000+ hours of unstructured transcripts and 20,000+ pdfs monthly, using state-of-the-art models and agentic workflows to surface actionable intelligence
- Define and execute the ML strategy by prototyping new architectures, engineering new features, benchmarking models, and building scalable pipelines designed for easy adaptation across new products and industry verticals
- Design and implement custom analytics pipelines to uncover high-value trends and opportunities within source data
- Extract, craft, and publish marketable insights on social media, driving brand engagement and inbound interest

Researcher - NYU Courant, Arthur Jacot Jun 2023 – Jun 2024

- Second authored *Hamiltonian Mechanics of Feature Learning: Bottleneck Structure in Leaky ResNets* proving the low dimensional bias of regularized neural networks [arXiv]; accepted for oral presentation at CPAL 2025

Data Science Consultant – Neuron7 Jun-Aug 2023

- Developed a library for benchmarking hybrid RAG solutions on client data. Decoupling traditional NLP techniques (semantic search) and modern embedding methods (SBERT, E5), the codebase improved search accuracy by up to 20% when retrieving relevant documents from database and up to 30% for multilingual texts
- Led quality check for real client search results to verify the labeling accuracy of the client's proprietary records

Assistant Modeling Engineer - Prophesee Jun-Aug 2022

- Designed a model to replicate the experimental noise profile of the company's proprietary vision system. Along with making the model an interactive tool, the hardware teams were able to optimize 7 component parameters
- Analyzed signal noise impact on error rate across 100+ conditions to guide future product research direction
- Completed thorough 45page documentation for continued use by the team once the internship had ended

Algorithms Graduate Tutor - NYU Courant, Ernest Davis Sept-Dec 2023

- Personalized instruction for 14 weeks to enhance master's students' understanding of advanced algorithmic concepts
- Facilitated breaking down problem statements and simulating algorithmic decision for 3-4 problems weekly

EDUCATION

New York University – Courant Institute of Mathematical Sciences NYC, NY
Master of Science in ***Computer Science*** (GPA: 3.9) Sept 2022 - May 2024
Thesis: *On Continual Learning using Deep Linear Networks* [pdf]

Northwestern University Evanston, IL
Bachelor of Science in ***Applied Mathematics*** (concentration in ***AI & Machine Learning***) Sept 2018 – Jun 2022
Minor in ***Economics*** and Kellogg Certificate Program for Undergraduates, ***Financial Economics***

KEY PROJECTS

Text2RelationalGraph [Github] Dec 2023

- Created an app to convert long-form texts into hierarchical relational graphs, for use in summarization and search

Large Language & Vision Model Seminar Sept – Dec 2023

- Analyzed cutting-edge research in Foundation Models and presented lectures on Llama 2 [slides|paper], Imagen Video [slides|paper], DINOv2 [slides|paper] and high resolution image synthesis [slides|paper]

Discretization gives Uniformity: Survey of a Universal Algorithm for OCO [pdf] May 2024

- Surveyed proposal to consolidate the best OCO algorithms to achieve optimal guarantees in all 3 convex-geometries

Survey of Online Learning and Approachability Theory [pdf] May 2023

- Blackwell's Approachability Theory, meant for Game Theory, silently provides the foundation of machine learning

Adam Limitation Study [pdf] May 2024

- Explored the reasons for Adam's empirical dominance by proving dynamical properties in 4 regimes of importance

CORE SKILLS

Programming: Python, C++, SQL, MATLAB, LLM Prompt Engineering, RAG, PyTorch, HuggingFace
Mathematics: Feature Learning, Online Learning, Linear Algebra, Statistics, Game Theory, Numerical Methods, PDEs
Achievements: Perfect 800 SAT Math and 170 GRE Quantitative, 1st place Math Olympiad, Creteil, France, 2017