JOEY DAVID

Graduate Student Researcher

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Education

M. Sc. in Artificial Intelligence and Data Systems - *Expected*   **Sep. 2024 – June 2026**
ENS-PSL - Mines Paris - Dauphine   *Paris, France*

CPGE / B.Sc. in Computer Science - *With Honors*   **Sep. 2020 – April 2024**
Univ. Claude Bernard / Oregon State Univ. - 3.96 GPA, mobility grant   *Lyon, France / Corvallis, Oregon*

Research

Temporal Predictors of Outcome in Reasoning Language Models | GitHub: latent-correctness-probe
J. David. arXiv:2511.14773. Under review, 2025.

Towards a Data-Efficient, Semi-Supervised Pipeline for Localization of Uveitis Symptoms
J. David, T. Wang, R. Jacquot. Ongoing, 2025.

Professional Experience

Graduate Student Researcher | *DISP Laboratory, INSA Lyon*   **March 2025 – Ongoing**
Development of the state-of-the-art model for localization of symptoms on fundus images for etiological diagnosis of uveitis, a sight-threatening eye inflammation, via the training and finetuning of a Vision Transformer.
Contribution to the European **HarmonicAI** project, establishing an international consortium for medical image analysis.

Software Engineer Intern | *Sopra Steria*   **April 2024 – July 2024**
Complete design and implementation of a CV analysis model based on natural language processing, along with fullstack development of various features for the *Operation* application, used by *Storengy* to manage France's gas network.

Selected Projects

Heuristic Retrieval for Latent Reasoning LLMs | GitHub: heuristic-latent-reasoning
Latent-space guidance system for Meta's *Coconut* model, coupling latent reasoning tokens with a FAISS vector store to nudge reasoning traces in real-time. Currently integrating RL penalties to improve generalization on complex queries.

Agentica | GitHub: agentica
Modular agentic scaffolding, able to convert strong LLMs into dynamic agents without need for agentic finetuning; simplifying the affordable implementation of agents running on simple LLM API calls. Aimed at automation, learning, and research. Currently includes dynamic multi-agent collaboration, autonomous tool generation and deep research faculties.

Tranformer implementation and persona finetuning | GitHub: gpt-2
Implementation and extension of GPT-2 from scratch, with added persona-adaptive text generation on limited compute with QLoRA finetuning, via automated construction of chat-based messages dataset.

C++ Neural Networks from Scratch | GitHub: emnist-nn-scratch
Modular C++ feedforward NN library (EMNIST + music classification), delivering 10–50× faster training than a naïve Python/NumPy baseline; includes tooling for hyperparameter sweeps and rigorous evaluation.

Skills

Concepts: Machine Learning, Deep Learning, Large Language Models, NLP, Neural Networks, Finetuning, Reinforcement Learning, Agentic AI, RAG, Optimization, System Design, Data Systems.
Tools: Python, PyTorch, CUDA, Slurm, JAX, HuggingFace, C++, SQL, MongoDB, Docker, Git, CI/CD.
Languages: English (native), French (native), Japanese (intermediate).

Interests

Volunteering :
- Contributed to the deployment of an HIV screening campaign for vulnerable populations in Beaujolais (France). (2021)
- Led an initiative to provide food and water to the homeless of Corvallis (Oregon) during winter. (2023)