Iliass Khoutaibi

khoutaibi.iliass@gmail.com | +33 6 05 97 27 94 | GitHub | LinkedIn

Research-oriented engineering student seeking a research or applied AI internship starting in Spring 2027

EDUCATION

ENS Paris-Saclay, MVA (Mathématiques, Vision, Apprentissage) September 2025 – Present
Master research program *Palaiseau, France*

- France's top Master research program in **Artificial Intelligence, Computer Vision, and Machine Learning**.

Institut Polytechnique de Paris – Télécom Paris September 2023 – December 2026
Engineering Degree at one of France's top engineering schools. *Palaiseau, France*

- **GPA equivalent: 4.0/4.0 (top 3% of students).**
- Majoring in Applied Mathematics, Computer Science and Artificial Intelligence.

Bachelor of Science September 2021 – July 2023
Undergraduate program. *Marrakech, Morocco*

- Intensive two-year undergraduate program preparing for entrance into France's top engineering schools.

EXPERIENCE

Harvard AI and Robotics Lab April 2026– Present
Visiting Research Intern *Cambridge, MA*

- Investigating connections between **continuum mechanics and representation learning**, with applications to **self-supervised learning** and understanding deformation, **transport**, and **optimal control** dynamics in **flow matching**.
- Developing **Large Language Model** methods for survival and **time-to-event prediction** on medical data from **Harvard hospitals**, with a research publication currently in preparation for **Nature Machine Learning**.
- Contributing to a research project on **geometry-aware in-context learning** for multimodal **vision-language models**, developing spatially informed demonstration retrieval methods to improve **spatial reasoning** in VQA and extending the approach to **vision-language-action robot control**, with publication in preparation.

RESEARCH PROJECTS

- **Diffusion Policy for Visuomotor Control**
  • Implemented diffusion-policy architectures for robot action generation conditioned on visual and proprioceptive observations.
  • Studied state-of-the-art transformer-based denoising policies for sequential decision-making in Robotics.

- **Pseudoinverse-Guided Diffusion Models for Inverse Problems**
  • Implemented a training-free guidance method for diffusion models using pseudoinverse approximations of forward operators.
  • Applied the method to image restoration tasks including inpainting, super-resolution, blur, and compression artifacts.
  • Compared reconstruction quality and sampling behavior against diffusion posterior sampling baselines.

- **LLM Agents for Text-Based Game Reasoning (Zork)**
  • Designed autonomous LLM agents for planning, memory, and interaction in text-based environments such as Zork/Jericho.
  • Implemented reasoning loops and action-selection policies to improve exploration in partially observable environments.

- **Controlled and Efficient LLM Generation**
  • Implemented controlled decoding methods for language models, including DFA/FSM-constrained generation for structured outputs and rule-based constraints.
  • Studied inference-efficiency techniques for transformers, including KV-cache optimization, LoRA-based adaptation, and FlashAttention-style memory-efficient attention.

SKILLS

- **Programming languages:** Proficient in **C, C++, Python**, **Java, JavaScript/Typescript, HTML, CSS** and **React.js.**
- **Frameworks, AI libraries & tools:** Skilled in **PyTorch, TensorFlow, NumPy, Scikit-learn, OpenCV**, **Git, Linux, Bash/Shell.**