

# Abir HARRASSE

UM6P, Morocco

abirharrasse.github.io

+212 688 972327 | Abir.HARRASSE@emines.um6p.ma

## Education

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### Engineering degree in industrial management

EMINES-UM6P

Engineering degree program

Sept 2022 - present

Coursework includes: multivariable calculus, Probabilities, Martingale strategies, Statistics, Lebesgue integration, measure theory, linear programming, biomedical engineering, Monte-Carlo method, Robotics, Analytics, Principles of economics

### Preparatory classes: Maths- Physics- CS - Robotics

EMINES-UM6P

Preparatory classes program

Sept 2020 - June 2022

Coursework includes: Real Analysis, General Topology, General Algebra, Linear Algebra, Electromagnetics, Electronics, Robotics

## Industry Experience

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September 2024 - Present

Research Intern

Bay Area, SF

- Contributing to the development of more reliable LLMs routers and exploring methods to enhance the interpretability and trustworthiness of current Large Language Models.

## Research Experience

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### LLMs evaluating LLMs

April 2024 - August 2024

Research Intern, advised by Prof. Chaithanya Bandi

National University of Singapore

- Developed adversarial agentic architectures for evaluating LLM outputs. Designed multi-agent systems where LLMs act as advocates, judges, and juries to dynamically assess responses. Implemented evaluation frameworks that improve decision-making through iterative adversarial interactions. Our method achieved up to a 10% improvement over existing evaluation techniques. The paper is currently under review at the AAAI Conference.

### RL with generative models

Jan 2023 - Jan 2024

Research assistant

College of Computing-UM6P

- I worked under the supervision of **Prof. Omar Saadi** on model-based reinforcement learning with generative models. My role included testing existing algorithms and exploring ways to enhance their runtime or sampling complexity.

### Product Assortment Optimization

June 2023 - July 2023

Intern

Africa Business School - UM6P

- I researched the assortment optimization's problem theoretical and its impact on retailer profitability under the supervision of **Prof. Agnès GORGE**. We explored the assortment problem under substitution and demand uncertainty and designed a new ML heuristic to solve our problem. The research report is accessible through: published report.

## Key Achievements and Projects

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### BCG Platinion Hackathon

Winner

October 2023

BCG Casablanca

- Our mobility solution, which optimizes the matchmaking process between transporters, suppliers, and demanders of goods, secured the top national prize and the second-place in the international round. The hackathon drew participants from 7 major global cities.

### Morocco IoT and AI Challenge

Finalist

September 2023

Marrakech

- As a finalist in the Morocco IoT and AI Challenge, I presented an ongoing project called Med-Flamingo. It merges medical visual language models with Large Language Models (LLMs) to develop a medical **chatbot**. This chatbot converses with patients in **Moroccan Dialect**, answering medical questions and creating reports for healthcare professionals. Currently, we are actively working on enhancing the AI safety aspects of our solution. The project is accessible through: medical chatbot

### Assets flood protection

Project leader

Mar 2023 - Apr 2023

EMINES-UM6P

- Developed exact algorithms to optimize the cost of building walls around a city of assets for small data and meta-heuristic algorithm to tackle the case of large data

### Asthma Mathematical Modelisation

Project leader

Oct 2022 - Dec 2022

EMINES-UM6P

- Under the guidance of **Prof. Marcel Filoche**, our biomedical engineering project applied mathematical modeling, employing Navier-Stokes equations to simulate asthma and gain insights into respiratory airflow during attacks. The project is accessible through: results.

### NaMO - Preparing for IMO's 61st edition

Participant

Jan 2019-March 2020

Rabat, Morocco

Among the top 30 participants selected for the country's most prestigious mathematical competition, where the best math students gathered to prepare for international contests like IMO.

## Awards

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### National Moroccan Merit Scholarship FAR

For the first 50 national scores of high school final examinations

### UM6P Excellence Scholarship

For outstanding results in entrance examinations

## Selected Courses

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### MIT introduction to deep learning Stanford CS 224N

MIT's introduction to NLP  
Stanford's NLP course

## Skills

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### Languages

*Beginner:* Mandarin. *Fluent:* English. *Bilingual:* French.  
*Native:* Arabic.

### Programming Languages/Tools

Python, Pytorch, Transformers, Diffusers, Datasets, Slurm,  
FICO Xpress, SQL

## Volunteering

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**The GenAI Winter School***Oct 2023-Present**Organizer*

Taking an active role in the coordination and organization of The **GenAI Winter School**, an upcoming event set to welcome distinguished researchers including **Yann Le Cun**, **Eric Xing**, and other prominent figures in the field.

**MathMaroc***Sept 2021-Present**Vice General Secretary*

Collaborating with fellow members to organize events, workshops, and outreach programs to engage students and enthusiasts in the exploration and appreciation of mathematics.

**President and founder of E-maths***Jan 2021 - June 2021**EMINES-UM6P*

A mathematical club inside UM6P university which aims to promote maths culture.

**General Secretary and co-founder of Rotaract EMINES***Jan 2022 - June 2022**EMINES-UM6P*

A club with a social impact that aims to make students have a positive impact on local communities in need.