

Ilyas Modni

PhD Candidate in Artificial Intelligence & Decision Tree Optimization

Rabat, Morocco | Citizenship: Moroccan

 i.modni@research.emi.ac.ma

 0009-0002-9498-8963 |  linkedin.com/in/ilyas-modni |  modniilyas.github.io

Research Interests

Machine Learning, Optimization, Decision Trees & Tree-based Methods, Explainable AI (XAI), Large Language Models (LLMs), Road Safety Analysis.

Education

- **Mohammadia School of Engineering (EMI)** Rabat, Morocco
Ph.D. Student in Artificial Intelligence & Decision Tree Optimization Since 2023
 - Advisor: Prof. Abdelaziz Berrado
 - Thesis Focus: Design and Development of an Intelligent System for Road Safety Data Valorization.
- **Faculty of Science Ben M'sik (FSBM)** Casablanca, Morocco
Master's in Data Science and Big Data (Graduated with Honors) 2023
- **Faculty of Science Ben M'sik (FSBM)** Casablanca, Morocco
Bachelor's in Mathematics and Informatics Sciences (Graduated with Honors) 2021

Experience

- **Manageering Inc.** Waterloo, Ontario (Remote)
Data Analyst & Market Research Team Member Nov. 2022 – Mar. 2025
 - Collaborated with a cross-functional team on a research project creating a Moroccan platform for smart home security.
 - Utilized BI & Data Analyst techniques to analyze the smart home security market, user behavior, and preferences.
- **Leoni Wiring Systems** Berrchid, Morocco
Data Scientist Intern Feb. 2023 – Aug. 2023
 - Designed and implemented dynamic KPI visualizations using BI tools and a standalone application to support real-time decision-making.
 - Applied advanced predictive algorithms to forecast KPI trends, enabling proactive business strategies.
 - Built a robust data pipeline to consolidate and centralize data for streamlined analysis.
- **Faculty of Science Ben M'sik (FSBM)** Casablanca, Morocco
Research Project Lead 2023
 - **Class Attendance Management System:** Created an innovative solution automating classroom attendance tracking utilizing facial recognition to identify and record student presence.

Publications

- [SITA 2025] I. Modni, et al. “Current Machine Learning Applications in Road Safety Monitoring: A Comprehensive Review.” *The 15th International Conference on Intelligent Systems: Theories and Applications*. (In press, Oct 2025).
- [IEOM 2025] I. Modni, et al. “An Overview of the Limitations of Traditional Greedy Tree-Based Methods.” *International Conference on Industrial Engineering and Operations Management*. Abstract & Presentation. DOI: 10.46254/af6.20250145. (Apr 2025).

- [GOL 2026] I. Modni, et al. "Towards Improved Decision Tree Interpretability via Large Language Models: A Case Study in Motorcycle Accident Severity." *The 8th International Conference on Logistics Operations Management*. (In submission).
- [Accident Analysis & Prevention Journal] I. Modni, et al. "Actionable Predictive Analytics for Informed Road Safety Decisions: Case of Motorcycle Accidents in Morocco." *Accident Analysis & Prevention Journal*. (In submission).

Fellowships, Honors & Awards

- PhD-Associate Scholarship (PASS) – Excellence Grant
Co-funded by the Ministry of Higher Education, Scientific Research and Innovation & CNRST Rabat, Morocco
Since 2023
- Ma Thèse en 180 secondes (MT180)
University Finalist (Representative of EMI at Mohammed V University) Rabat, Morocco
May 2025

Selected Presentations

- AI For Road Safety Workshop
Presenter: "Actionable Predictive Analytics for Informed Road Safety Decisions" (EMI) Rabat, Morocco
Nov 2025
- 2024 Inaugural Conference for Manageering University Startups
Presenter: "DomotiCool: AI-powered smart devices platform" (UH2C) Casablanca, Morocco
July 2024
- International Conference on Optimization and Learning (OLA 2024)
Presenter: "Machine Learning Applications in Road Safety: A Comprehensive Review" Dubrovnik, Croatia
May 2024

Schools, Workshops & Certifications

Winter/Summer & Spring Schools

- Responsible ML Winter School, Umeå University, Sweden Mar 2025
- Winter School: Next-Gen AI & Economic Applications, UM6P, Benguerir Feb 2025
- Spring School: Multimodal Foundation Models & GenAI, INPT, Rabat Apr 2024
- Winter School on Innovation and Valorization, Unite and Inovalo360 (Remote) Jan 2024

Workshops & Seminars

- AI Technologies in Public Service: Needs and Challenges, Umeå University (Remote) Apr 2025
- IEOM Workshop (Six Sigma & Innovation and Entrepreneurship), INPT, Rabat Apr 2025
- Wolfram Training: Mathematica & System Modeler, EMI, Rabat Apr 2024
- Workshop: "Initiation to Research: Academic Tools", EMI, Rabat Apr 2024
- International Seminar: National Road Safety Strategies, Conrad Arzana, Rabat Feb 2024

Technical Skills

- **AI & Machine Learning:** Deep Learning, Advanced Decision Trees, Explainable AI (XAI), AutoML, Time Series Forecasting, Large Language Models (LLMs), Prompt Engineering.
- **Programming & Data:** Python, SQL, Pandas, NumPy, Matplotlib, Seaborn, Plotly, Dash, R.
- **Big Data & Tools:** Apache Hadoop, Hive, NiFi, MongoDB, HBase, MySQL.
- **Web & BI:** React, Flask, Power BI, Tableau.
- **Dev Environments:** Google Colab, Jupyter, VS Code, RStudio, Git/GitHub.
- **Operating Systems:** Linux, MacOS, Windows.
- **Research:** LATEX, Zotero, Elicit, ResearchRabbit.

Languages

Arabic (Native), French (Advanced), English (Intermediate).