

## Education

### University of Moncton

*Master of Applied Science (MASc)*

**Jan. 2024 – Dec. 2025**

*New Brunswick, Canada*

### National Institute of Applied Science and Technology (INSAT)

*Engineering studies in Instrumentation and Industrial Maintenance (Graduated with High Honors)*

**Sep. 2018 – Oct 2023**

*Tunis, Tunisia*

## Experience

### CEAAC (Centre d'études acadiennes Anselme-Chiasson)

*AI Research Assistant*

**Jun 2024 – Present**

*New Brunswick, Canada*

- Implementing an open-access natural language processing system with agentic retrieval augmented generation for efficient querying of Acadian archives.
- Developing a ChatGPT-like interface to enhance accessibility of Acadian heritage for researchers and the public, leveraging large language models and knowledge graphs.
- Designing a knowledge management system to integrate expert archivists' insights into the AI-powered query process.
- Project website: [chatacadien.ca](http://chatacadien.ca)
- Tech stack: Python, Langchain, Neo4j, Docker.

### LARIHS Lab, University of Moncton

*AI Research Assistant*

**Dec 2023 – Present**

*New Brunswick, Canada*

- Collaborating on diverse projects, focusing on Robotics and AI research in computer vision for few-shot defect detection and Big Data Time Series Analysis.
- Tech stack: Python, PyTorch, Pandas, Bash.

### LARIHS Lab, University of Moncton

*AI Research Intern*

**May 2023 – Aug 2023**

*New Brunswick, Canada*

- End-of-studies Project focused on 'Industrial surface defect detection employing computer vision and a KUKA arm robot.' Funded by Mitacs Globalink scholarship.
- Applying contrastive learning with YOLO and DETR based models for few-shot object detection for limited datasets of industrial surface defects for wood and steel products.
- Explore techniques to improve object detection of small-size defects.
- Tech stack: Python, PyTorch, Bash, SAHI

### TICDCE (Tunis International Center for Digital Cultural Economy)

*Data Science Intern*

**Jul 2022 – Sept 2022**

*Hybrid*

- Create a recommendation system based on collaborative filtering for tourists interested in historical places in Tunisia.
- Explore different models of recommendation systems (Content-Based, Collaborative, or Hybrid).
- Apply Augmentation techniques for a private dataset containing numeric and categorical features.
- Tech stack: Python, TensorFlow, scikit-learn, SMOTE.

### STMicroelectronics — INSAT

*Embedded Systems Developer Intern*

**Feb 2022 - June 2022**

*Tunis, Tunisia*

- Load image decoding library libsail on top of Azure RTOS libraries.
- Contribute to the realization of a demo based on the ported libsail library running on an STM32 card.
- Tech Stack: C/C++, libsail, STM32CubeIDE, Git.

### ST2i (Société Tunisienne d'Informatique pour l'Ingénierie)

*Back-End Developer Intern*

**Jul 2021 – Sept 2021**

*Hybrid*

- Study and compare different open-source IAM (or IdP) layers based on OAuth 2.0 for identity management and user access control.
- Implement the 'Keycloak' layer as a RESTful API in a micro-service architecture application.
- Tech Stack: JAVA, Angular, Spring Boot, PostgreSQL.

## Technical Skills

---

**Programming Languages:** Python, JAVA

**Databases:** MYSQL, MongoDB, PostgreSQL

**Version Control:** Git, Docker

**Deep Learning Frameworks:** Pytorch

**Data Science and Visualization Stack:**

- **Data Processing:** Pandas, Numpy, Scikit-Learn
- **Data Visualization:** Matplotlib, Seaborn, Plotly
- **Dashboards:** Streamlit

## Languages

---

**Arabic :** Native

**French :** Bilingual

**English :** Full Professional Proficiency

## Extracurricular Activities

---

- Member, Aerobotix INSAT Club: Participated in various technical trainings and competitions, cultivating teamwork skills for collaborative projects.
- Webmaster, IEEE INSAT IAS Club (Industry Applications Society): Contributed to the planning and organization of the event IAS Annual Meeting 2021. Designed and managed the introductory event website.
- Kaggle Notebook expert: Actively participated in Kaggle competitions involving Natural Language Processing, Computer Vision, and Time Series. Kaggle profile at [k\\_rayenghali023](#)