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# Blog | GitHub | Linkedin

## EXPERIENCE

# NB Power | AI Researcher

Moncton, Canada | 09/2021 - Present

- Led the development and deployment of an advanced change detection pipeline on Nvidia Jetson devices, now essential for cost analysis following disasters. This system significantly improves the accuracy and efficiency of assessing damage and estimating recovery costs.
- Managed the integration of open-source language models with LangChain, developing an API through FastAPI to enable more human-like browsing of company procedures. Also spearheaded the creation of another FastAPI-based API for course browsing, suggesting relevant courses, and providing accurate course codes previously unavailable on the old LMS system, utilizing Retrieval-Augmented Generation (RAG). Worked closely with web developers for the successful implementation and deployment of both systems.
- Directed the design and deployment of a YOLO-based detection system for inspecting electrical components and detecting Personal Protective Equipment (PPE). The model, deployed on-premises using ONNX on FastAPI, improved cost efficiency and privacy. Collaboration with web developers led to the successful creation of the entire system, with enhanced performance due to training on company-specific data.

TWO-HAT Security (Microsoft owned) | AI Research Intern Kelowna, BC | 01/2020 - 09/2020

- Conducted in-depth research on advanced AI techniques to enhance content moderation strategies. My focus was on proposing innovative methods for automatically detecting and blurring sensitive material in images, involving the development and application of semantic segmentation techniques. These techniques precisely identified and obscured specific content within images, ensuring privacy and compliance with content standards.
- Developed sophisticated deep learning models specifically designed for the automated moderation of audio and video content. This initiative aimed to enhance content safety and ensure compliance with regulatory standards. The models were trained to detect and mitigate inappropriate elements in multimedia files, effectively reducing human intervention and improving the accuracy and efficiency of the content moderation processes.

## PRIME Research Group | AI Research assistant

Moncton, Canada | 08/2017 - 08/2019

- Designed and led an AI-based lobster detection project, evaluating RCNNs and YOLOs to achieve an optimal speed-accuracy balance for real-world scenarios. Programmed a robot for lobster manipulation and deployed the system on the edge using TensorRT on Nvidia Jetson. The model was integrated into a robot that processes lobsters efficiently.
- Collaborated with sports coaches to enhance athlete performance through posture analysis, researching and benchmarking pose estimation algorithms. Selected and adapted OpenPose to meet project requirements, ensuring portability by deploying on Nvidia Jetson Nano. This process was used in various MVPs to demonstrate the relevance of AI in sports and rehabilitation.
- Published research papers across various domains, contributing to the broader academic and professional understanding of AI applications and advancements. My work spans computer vision (classification, detection, segmentation, etc.), natural language processing (NLP), and reinforcement learning (RL).

## PUBLICATIONS

• A. Traoré and M. A. Akhloufi, "Violence Detection in Videos using Deep Recurrent and Convolutional Neural Networks," 2020 IEEE International Conference on Systems, Man, and Cybernetics (SMC), Toronto, ON, Canada, 2020, pp. 154-159, doi: 10.1109/SMC42975.2020.9282971.

• Traoré A., Akhloufi M.A, "2D Bidirectional Gated Recurrent Unit Convolutional Neural Networks for End-to-End Violence Detection in Videos," Image Analysis and Recognition. ICIAR 2020. Lecture Notes in Computer Science, vol 12131. Springer, Cham.

• A. Traoré, A. O. Ly and M. A. Akhloufi, "Evaluating Deep Learning Algorithms in Pulmonary Nodule Detection<sup>\*</sup>," 2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), Montreal, QC, Canada, 2020, pp. 1335-1338, doi: 10.1109/EMBC44109.2020.9175152.

• Deep Learning for COVID-19 Detection on Chest X-Ray and CT Scan, EMBC 2020 A. Traoré, A. O. Ly and M. A. Akhloufi, "Evaluating Deep Learning Algorithms in Pulmonary Nodule Detection\*," 2020 42nd

Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), Montreal, QC, Canada, 2020, pp. 1335-1338, doi: 10.1109/EMBC44109.2020.9175152.

• Abdarahmane Traoré, Jeremy Jensen, Moulay A. Akhloufi, "Deep learning for remote sensed target classification in maritime satellite radar images," Proc. SPIE 11014, Ocean Sensing and Monitoring XI, 110140E (10 May 2019), doi:10.1117/12.2519577.

#### Project

• Leveraged the Unity game engine to generate synthetic data, which was instrumental in training models for various projects. This approach was particularly effective in environments where real-world data was either unavailable or insufficient, allowing for the creation of detailed, controlled scenarios to enhance model accuracy and robustness.

• Utilized the Unity game engine for reinforcement learning to develop a system that enables a drone to autonomously navigate through rings. This involved creating a simulated environment within Unity where the drone could learn and refine its flight path by continuously interacting with virtual rings, mimicking real-world navigation challenges.

#### CERTIFICATIONS

- Deep Learning Specialization DeepLearning.AI.
- Natural Language Processing with Attention Models DeepLearning.AI.
- Mathematics for Machine Learning and Data Science Specialization DeepLearning.AI.
- Generative AI with Large Language Models DeepLearning.AI.
- Machine Learning with Apache Spark IBM.
- AWS Cloud Technical Essentials AWS.

#### Education

- University of Moncton Ph.D. Applied Science
- University of Moncton M.Sc. Computer Science
- University of Moncton B.Sc. Computer Science

#### Skills

• Programming Languages: Python, C++, SQL

• Libraries/Frameworks: Pytorch, Tensorflow, OpenCV, Huggingface, LangChain, Numpy, FastAPI, DjangoREST

• Tools / Platforms: AWS, SparkML, Compute Canada, Docker, Docker Compose, Git (Actions), Gitlab(CI/CD), Linux

• Languages: French (Native), English (Professional Proficiency), Bambara (Native)

Moncton, Canada 2024 - 2027 (expected)

> Moncton, Canada 2019 - 2021

Moncton, Canada 2015 - 2019