

# Zarreen Naowal Reza

✉ [zarreen.naowal.reza@gmail.com](mailto:zarreen.naowal.reza@gmail.com)

☎ 226-3486674

🌐 [linkedin.com/in/zarreenreza](https://www.linkedin.com/in/zarreenreza)

🌐 <https://github.com/znreza>

🌐 <https://ai-diary-by-znreza.com/>

## Summary

- Strong research background in Machine Learning and Deep Learning in computer vision and NLP
- Practical experience in Generative AI (LLMs), Prompt Engineering, Few-shot Learning
- Apt in Python, PyTorch, Tensorflow, PySyft, MLOps
- Privacy-preserving AI content developer and independent researcher at OpenMined
- IBM Certified Associate Developer in Quantum Computing
- Honorable Mention in NASA Space Apps Challenge 2020
- 3rd winner in Thales Student AI Innovation Championship 2018 out of 52 teams across Canada
- Extremely self-motivated, organized, and hard-working
- Leadership, mentorship, and consulting experience
- Excellent track record of succeeding both as a team and solo independent performer

## EXPERIENCE

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### JACOB B

**Feb. 2023 – Present**

Senior Applied AI Research Scientist / Project Manager  
Montreal, QC

- Developing an AI-powered recommendation system to recommend startups to potential advisors using NLP techniques and Transformers
- Developing interactive avatars for museum guests using Generative AI (LLMs), Voice Synthesis, Prompt Engineering, and Few-shot Learning
- Managing and planning sprints for a team of four AI professionals ensuring milestones delivery promptly
- Mentoring junior AI researchers and leading code review, code refactoring, and standardization efforts across the organization

*Tech stacks used:* NLP, BERT, Transformers, LLMs, Generative AI, MLOps, Jira for Agile Methodology

### Volta Charging

**Nov. 2021 – Jan. 2023**

AI Research Scientist  
Montreal, QC

- Worked at the intersection of high-quality research, data science, and applied machine learning to produce innovative ML solutions for EV charging stations
- Led and built multiple developments and deployment pipelines for ML solutions increasing company revenue by 30%
- Led the efforts in incorporating PETs and Ethical AI into new and existing AI projects as a PETs specialist in the company
- Implemented quick turnover POCs and demos using open-access and first-party data for internal clients, including the Sales, Marketing, and Station Engineering team

*Tech stacks used:* NLP for unstructured text, Deep Neural Networks, Regression, Optimization, PyTorch, Tensorflow, MLflow, Kubeflow, AWS, DVC, Docker, A/B Testing, Big Data, Snowflake, Postgres SQL

## Thales Canada Inc., Guavus

Sep. 2019 – Nov. 2021

Data Scientist

Montreal, QC

- As part of core data science duties, I accomplished the following
    - Successfully developed and delivered multiple proofs-of-concept (POC), including root issue analysis with probabilistic graphical models, and user mobility prediction using Markov Chain
    - Helped customer success team build deal-closing product demo using ElasticSearch and Kibana dashboard
    - Quickly implemented cutting-edge machine learning algorithms proposed in research papers, including causal inference, Bayesian network, gaussian mixture model, and graph similarity resulting in performance improvement by 10 times
    - Other machine learning algorithms include SHAP AI explainer, Decision Trees, Xgboost, etc.
  - As part of MLOps duties, I accomplished the following
    - Developed the company's first end-to-end ML orchestration pipeline of machine learning POC, starting from development to deployment at scale and continuous monitoring
    - Built a prototype of an end-to-end MLOps pipeline at scale using Docker, Kubernetes, ArgoFlow, MLflow, Kubeflow, Seldon Core, AWS Lambda, Prometheus, and Grafana which was adapted across all engineering teams for future POCs
    - Performed thorough analysis of various MLOps frameworks in the market that helped the company design the most suitable MLOps architecture
  - Wrote production-ready code that complies with software development coding best practices and test-driven data science practices following agile methodology
  - Mentored interns, and worked collaboratively with researchers, engineers, and Customer Success team
- Tech stacks used:*** Probabilistic Graphical Models, Gaussian Mixture Model, Bayesian Models, Markov Chains, Causal Inference, Regression, Forecasting, XGboost, SHAP, ElasticSearch, Kibana, Docker, Kubernetes, Mlflow, ArgoFlow, Seldon-Core, Grafana, AWS, JIRA, Git, SQL, A/B testing

## Research Assistant, Machine Learning

Dec. 2017 – May 2019

Institute of Diagnostic Imaging and Research (IDIR)

Windsor, ON, Canada

- Built TensorFlow-compatible training data from custom SQLite DB3 database
  - Performed data cleanup, pre-processing, augmentation, and annotation from scratch
  - Implemented deep-learning-based computer-vision algorithms using Tensorflow and Keras for real-time weld quality analysis achieving industry-level performance resulting in the model being deployed in two automotive companies (BMW, Toyota) assembly plants
  - Trained junior students in Python Programming and Machine Learning to succeed in their co-op term
- Tech stacks used:*** Deep Learning (CNN, Yolo, SSD, etc.), Signal processing (FFT), Tensorflow, Keras, Annotation tools, Ultrasonic b-scans image processing

## OpenMined

Mar. 2020 – Present

Privacy-Preserving AI Research Engineer, open-source contributor

Remote, Global

- Projects include
  - [Large Language Model Auditing Blog post series](#)
  - End-to-end encrypted deep learning model for mental health disease detection from fMRI images using Differential Privacy, Federated Learning, and Secure Multi-party Computation
  - Private Deep Learning of Medical Data for Multiple Hospitals using Federated Learning and Differential Privacy (Presented in [PriCon 2020](#))

- Publications
    - [PySyft: A Library for Easy Federated Learning - Studies in Computational Intelligence, SpringerLink](#) (June 2021)
  - Course content design and development for Private AI Series funded by FacebookAI, PyTorch, and the University of Oxford
    - [Federated Learning Course](#) – In this lesson, I taught about how to use federated learning to access and manipulate data on remote devices using PyTorch and PySyft. Students get to practice hands-on coding with PyTorch-based privacy-preserving AI libraries to analyze data and train a deep learning model. Course codes are available [here](#).
  - Core technologies include PySyft, PyTorch, diffprivlib (DP library by IBM), Tensorflow-Federated
  - Other roles include writing blogs, mentoring, organizing boot camps, advising the education team, etc.
- Tech stacks used:* Differential Privacy, Federated Learning, Deep Learning, PySyft, TFF, PyTorch

### Women Who Code (WWCode)

**Jul. 2021 – Sep. 2022**

Leadership Fellow, Aug. 2021 – Sep. 2022

Remote, Global

- Led the Data Science Track consisting of 4500+ members in organizing free events, and workshops and building an empowering community that helps women excel in STEM roles
- Led a team of 50+ volunteers in program designing, event planning, and building technical content for online track events including webinars, workshops, hands-on coding tutorials, career growth, etc.
- Co-organized [WWCode Hackathon for Social Good 2022](#) attended by 200+ participants and [BlockDataPy 2022 Tech Summit](#) – a one-day summit consisting of talks in blockchain, data science, and python
- Honed public speaking skills through speaking at 40+ events including annual summits and conferences

*Tools used:* Github, Monday Board, Canva, Notion, Kanban Boards

## EDUCATION

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### University of Windsor

**Sep. 2017 - May 2019**

Master's degree (Thesis), Computer Science

Windsor, ON

- Master's dissertation [Real-time Automated Weld Quality Analysis from Ultrasonic B-Scan using Deep Learning \(May 1, 2019\)](#) got nominated for Governor General's Gold Medal by the Faculty of Computer Science
- Worked as a Research Assistant in IDIR for developing the first-ever AI-powered automated spot weld detection technology using deep learning partnered with BMW, Toyota, and NarmCo.
- Hired as a Graduate Teaching Assistant and Lab Tutor throughout the duration of the study
- 3<sup>rd</sup> Winner in Thales Student AI Innovation Championship 2018 out of 52 teams across Canada

## AWARDS

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- Highly Qualified Personnel (HQP) - NSERC Create oN DuTy!
- Director's Honor Roll - Director, School of Computer Science, University of Windsor
- Governor General's Gold Medal (Nominee) - University of Windsor
- Going Beyond and Above in Research Award (Nominee) - University of Windsor
- Ambassador Award (Nominee) – University of Windsor