Zarreen Naowal Reza

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Summary

- Strong research background in Machine Learning and Deep Learning in computer vision and NLP
- 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

Volta Charging **Nov. 2021 – Present**
AI Research Scientist
Montreal, QC

- Working at the intersection of high-quality research, data science, and applied machine learning to produce innovative ML solutions for EV charging stations
- Leading and building multiple developments and deployment pipelines for ML solutions increasing company revenue by 30%
- Leading the efforts in incorporating PETs and Ethical AI into new and existing AI projects as a PETs specialist in the company
- Implementing 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 and text analysis (TF-IDF, Word Embeddings), Deep Neural Networks, Regression, Optimization, LSTM, Python, PyTorch, Tensorflow, Mlflow, Kubeflow, AWS, Docker, A/B Testing, Big Data, Pyspark, 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, worked collaboratively with researchers, engineers, and Customer Success team

Tech stacks used: Probabilistic Graphical Models, Statistical modeling, Gaussian Mixture Model, Bayesian Models, Markov Chains, Causal Inference, Random Forest, Regression, Forecasting, XGboost, SHAP, ElasticSearch, Kibana, Docker, Kubernetes, Mlflow, ArgoFlow, Seldon-Core, Grafana, AWS, MinIO, JIRA, Github, Gitlab, 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 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), Tensforflow, Keras, Annotation tools, Ultrasonic b-scans image processing

OpenMined **Mar. 2020 – Present**

Privacy-Preserving AI Research Engineer, open-source contributor
Remote, Global

- Projects include
    - Privacy-preserving 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 (SMPC)
    - Private Deep Learning of Medical Data for 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 consists of 4500+ members in organizing free events, 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 200+ participants and BlockDataPy 2022 Tech Summit – a one-day summit consisted 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, Canva, Notion**,** Kanban Boards

EDUCATION

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 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 Graduate Teaching Assistant and Lab Tutor throughout the duration of the study
- 3rd Winner in Thales Student AI Innovation Championship 2018 out of 52 teams across Canada

AWARDS

- 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

SKILLS & INTERESTS

- **Soft Skills:** Pro-active, creative, leadership, motivating, analytic reasoning, hard-working, disciplined, mentorship, management
- **Interests:** Yoga and Pilates, chess, cooking new dishes, climate change, astrophysics, philosophy, connoisseur of music, true crime