Kamron Zaidi

MS in Machine Learning (Carnegie Mellon University, December 2025)
BASc in Machine Intelligence, Minor in Bioengineering (University of Toronto, April 2024)

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Machine learning engineer and full-stack developer with versatile programming skillset. Experience in ML, research, software, firmware, hardware, and data analytics provides a strong base to proficiently learn new skills in the domain of programming, math, and science. Skilled in leadership and communication both in teams and with clients.

SKILLS

- Tools Used Professionally: Python (PyTorch, Tensorflow, Keras, scikit-learn, SciPy, Pillow, Django, Matplotlib, Pandas, NumPy, Jupyter), C, Java, SQL, Bash/Linux, Git, Docker, MATLAB, Dart/Flutter, HTML/CSS/JS.
- Tools Used in Classes/Projects: All above + ReactJS, Assembly, C#, C++, VBA, Arduino framework, Verilog.
- Hard Skills: Machine learning, AI, data analysis, research, full-stack dev, biomedical imaging/human bio.
- Soft Skills: Adaptability, learning new skills, creative problem solving, leadership, communication, collaboration.

WORK EXPERIENCE

BKR Energy, Toronto *(May 2020 – Present)*

Vice President of Technology, May '22 – Present | Full-Stack Developer, May '21 – May '22 | Data Analyst, May '20 – Sept '20

BKR Energy develops smart cloud-based HVAC control strategies and thermostats for hybrid heating systems to minimize energy costs, reduce greenhouse gas emissions, and improve comfort. Currently managing smart thermostats installed at over a thousand Ontario homes through three government sponsored hybrid heating pilot projects, plus several additional projects involving large multinational institutions and corporations.

Responsible for research, planning, development, and maintenance of all software part of the company's services.

- Enhanced competitive advantage by identifying use-cases for **machine learning**, and implementing techniques such as Deep Neural Networks, Reinforcement Learning, SVM, Random Forests, and Multiple Regression.
- Used **online optimization** and **time series forecasting** methods to continuously estimate model parameters from live sensor data, creating a platform that grows and adapts to user behaviour.
- Used **Python**, **Excel** and **SQL** to analyze high frequency data from a variety of sensors, used data analytic techniques to identify errors, discover trends and summarize results for use in reports and applications.
- Managed a **Python Django** AWS EC2 **Linux** backend, to provide **REST API** endpoints and server functions.
- Developed a smart thermostat control app for Android, iOS and web using **Flutter** and **Dart**.
- Designed and developed interactive web pages using **HTML/CSS/JS**.
- Collaborated with developers and managers from large international companies and organizations to secure projects and funding for the company, expand our services and establishing strong business relationships.

Advanced Micro Devices (AMD), Markham *(May 2022 – August 2023)*

Firmware Developer, May '23 – Aug '23 | Power and Performance Data Scientist, May '22 – May '23

- Used **machine learning** techniques (Deep Neural Networks, Random Forests, Convolutional Neural Networks, LSTM, time series forecasting) to improve accuracy of **Python** data processing scripts.
- Applied **linear and non-linear optimization** and **metaheuristic algorithms** to tune model parameters, creating more accurate models. Used **linear algebra** concepts to improve computation and convergence speed.
- Used **Python** and **Excel** to filter, process and analyze power consumption and performance data, validating and identifying improvements to power management features in firmware for microprocessors being developed.
- Created new firmware functions, improved existing functions, fixed bugs and validated function behaviour using low-level **C** programming and hardware debugging, following a **Git** and **Jira** workflow.
- Developed new automation and data processing tools using **Python**, and significantly improved speed and efficiency of existing scripts/tools.

Impuls AI, Toronto *(May 2020 – August 2021)*

Co-Founder and Chief Operating Officer

- Founded a startup called Impuls AI, which aimed to develop biomedical solutions using machine learning.
- Participated in the University of Toronto Hatchery NEST startup accelerator. Learnt **business management**, **leadership**, **communication** and **presentation** skills, and pitched our product to industry experts.
- Developed a mobile app using **Flutter** and **Python** for screening diseases using **photoplethysmography (PPG)** data collected via a smartphone camera, processed using **signal filtering** and **machine learning**.
- Developed a web AI marketplace using **ReactJS** and **Google Firebase** to connect ML freelancers to SMEs.

EDUCATION

University of Toronto *(Sept 2019 – April 2024)*

Bachelor of Applied Science in Engineering Science, Major in Machine Intelligence, Minor in Bioengineering

- 3.7/4.0 GPA, Dean's Honour List in all semesters. 4.0/4.0 GPA in every ML course.
- Courses in Machine Learning & Artificial Intelligence, Robotic Planning, Computer Vision & Image Processing, Natural Language Processing & Computational Linguistics, Decision Support Systems, Biomedical Imaging, Cell and Molecular Biology, Algorithms, Data Structures, Databases, Linear Algebra, Multivariable Calculus, Probability & Statistics, Differential Equations, Signal Analysis, Hardware, Engineering Design & Ethics, Physics

Carnegie Mellon University *(August 2024 – December 2025)*

Master of Science in Machine Learning, In Progress with Summer Internship/Research Component

- Ongoing courses in: Deep Learning Systems, Intermediate Statistics, Advanced Machine Learning

PROJECTS AND RESEARCH

- Currently researching at CMU: **uncertainty quantification** and **model uncertainty** for deep learning, using state-of-the-art techniques such as **Bayesian Neural Networks** and **conformal prediction.**
- **Thesis:** Developed an ML algorithm that classifies chess moves as brilliant or not, using game trees generated from **Reinforcement Learning**-trained chess agents (Lc0) as input. This advances our understanding of brilliance and **creativity** in the domain of chess, a previously uninvestigated field in chess AI research.
    - Presented research at the **International Conference for Computational Creativity** (ICCC) 2024 in Sweden. Short paper from the conference: https://arxiv.org/abs/2406.11895
    - Research discussed in the New Scientist and other articles: https://www.newscientist.com/article/2436253-ai-can-identify-the-most-brilliant-and-entertaining-chess-moves/
    - Interviewed by the Canadian Broadcasting Corporation (CBC) to discuss the research and its impacts.
- **Capstone** project in machine learning with the AI Deployment and Evaluation lab at Trillium Health Partners: developed a **computer vision** algorithm for detecting Intracranial Hemorrhage from brain CT scans.
- Designed custom neural network architecture in **PyTorch**, harnessing **natural language processing** (BERT) and **convolutional neural networks** (EfficientNetV2), to predict product sales and popularity given online store (Steam) page images, descriptions and metrics.
- Trained neural networks using **PyTorch** to perform **computational linguistic** techniques (transition-based and graph-based dependency parsing) to analyse a natural language corpus of English Web text.
- Built an **information retrieval** (IR) system using **PyTorch**, **BERT**, **NLTK**, and **Whoosh** to query text data.

ACHIEVEMENTS

- Recipient of $20,000 C. David Naylor scholarship for "academic merit and demonstrated leadership excellence"
- Placed 2nd in the Scinapse Undergraduate Science Case Competition in Biology (2020)
    - Published research paper in a peer-reviewed journal: "MicroRNA-Mediated Inhibition of Amyloid Beta Protein Synthesis in Alzheimer's Disease: A Research Protocol" (https://doi.org/10.26685/urncst.189)
- Placed 4th at Intel International Science and Technology Fair after being selected as one of eight students representing Canada (2019)