JESSICA WANG

Machine Learning & Data Science | Harvard M.S. Candidate | Graduation Dec 2025 | Available Jan 2026

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EDUCATION

Harvard University - M.S. Data Science *Sep 2024 - Dec 2025 (Expected)*

University of Toronto - St. George *Sep 2019 - Apr 2024*

B.S. Data Science, Minor Mathematics ***cGPA: 3.99/4.00***

Awards: T.A. Reed Scholarship (Top 1 cGPA), Later Life Learning Scholarship (Top 5% cGPA), In-Course Scholarship

SKILLS

Programming Language:	Python, Java, R, SQL, C, HTML/CSS, JavaScript
Machine Learning & Data Analysis:	PyTorch, Tensorflow, XGBoost, Scikit-learn, Numpy, Pandas, Matplotlib
Tools & Big Data:	Git, Jupyter, Anaconda, Tableau, PySpark, Hadoop, Docker, Slurm

PROFESSIONAL EXPERIENCE

American Express, New York, United States *Jun 2025 - Aug 2025*

Machine Learning Engineer Intern

- Developed a **full-stack multi-agent voice-bot system** designed to handle complex, multistep user inquiries—**enabling a projected ∼25% chat/call automation increase** and supporting **long-term cost savings potential of ∼$90M**.
- Built multi-agent coordination with the **OpenAI Agents SDK**, developing a **FastAPI** backend (SOLID principles, async orchestration) and a **Gradio** interface with speech detection and end-to-end pipelines—enabling **real-time** agent interaction.
- Integrated SOTA **speech models** (STT and TTS) and **agent LLMs** (autoregressive vs. diffusion-based) into the backend, achieving $<$ **0.5s transcription/generation latency** while maintaining modularity for future model upgrades.
- Engineered and automated **evaluation pipelines** with sandbox testing and adversarial emulation, leveraging LLMs to **simulate customer scenarios and evaluate agent responses**—ensuring robustness, scalability, and production reliability.

Vector Institute, Toronto, Canada *May 2023 - Apr 2024*

Researcher - Supervised by Prof. Rahul Krishnan.

- Developed **binary classification models** using **XGBoost** to predict 14-day in-hospital mortality from the GEMINI dataset with **2.2 billion+** clinical data points, assessing model performance across patient groups defined by Social Determinants of Health.
- Built an evaluation framework for **subgroup fairness analysis** under **distribution shifts**, showing up to **3.5% AUC** improvement when deploying socially-diverse models to underrepresented groups, underscoring the need for data diversity in training.
- Developed modular **SHAP-based interpretability dashboards** to analyze and visualize **key predictive features**, enabling scalable **interpretability**, improving model transparency, and equipping clinicians with actionable insights for decision-making.

University of Toronto Dynamic Graphics Project Lab, Toronto, Canada *Jan 2022 - Apr 2024*

Researcher - Supervised by Prof. Fanny Chevalier.

- Developed and deployed an **augmented reality application** on **Microsoft HoloLens** to assist presenters during Q&A sessions by analyzing audience audio input and presentation context to generate real-time answers and complementary insights.
- Fine-tuned a **BigBird-based question-answering model** and **DistilRoBERTa-based sentence transformer** on the Huggingface **Adversarial QA Dataset**, achieving a **27% improvement** in Exact Match score over the baseline models.
- Deployed the pipeline to HoloLens, integrating a **Unity** interface with a **FastAPI** backend for orchestrating components.

IBM (Data & AI Team), Toronto, Ontario *May 2022 - Dec 2022*

Technical Sales Specialist Intern

- Built **ML pilot demos** using scikit-learn, PyTorch, and **Watson AI** services, deployed via **IBM Cloud** infrastructure and packaged in **Docker** containers to ensure stability, repeatability, and smooth deployment across client settings.
- Constructed end-to-end **proof-of-concept** (PoC) workflows aligned with client business needs—applying model versioning, performance monitoring, and MLOps best practices to demonstrate production readiness during pre-sales engagements.

Enverus, Calgary, Alberta *Sep 2021 - Apr 2022*

Data Scientist Intern

- Engineered and automated **ETL workflows** that merged structured and unstructured energy industry's data, applied data cleaning and normalization for quality, and then developed and visualized **regression** and **time-series** models to drive actionable insights.

PROJECTS

TurkEye - The Harvard-Duke AI/ML Hybrid Global Hackathon "Honorable Mention" *Feb 2025*

- Built an AI-powered Chrome extension using **deepfake detection models** (CNN/ViT), **Google Cloud Vision** & **Gemini APIs**, and a backend pipeline to filter harmful AI-generated media (deepfakes, explicit images, misinformation) in real time.

Mitigating Underexplored Demographic Biases in NLP - Supervised by Prof. Jacob Andreas *Sep 2024 - Dec 2024*

- Extended the **Context-Debias** framework to mitigate **underexplored demographic biases** including age and disability biases in pretrained language models, leveraging **orthogonal projection techniques** to address stereotype propagation in NLP tasks.
- Significantly reduced age and disability biases by up to **90%**, while maintaining the original downstream task performance.