Billy Shi

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Education

University of Waterloo — Waterloo, ON
Master's of Data Science and Artificial Intelligence; Grade: 85/100 — *Sep 2025 – Present*

Simon Fraser University — Burnaby, BC
Bachelor of Science in Computer Science (with Distinction); CGPA: 3.72/4.3 — *May 2021 – Dec 2024*

Programming Skills

Languages & Web Development: Python, Java, JavaScript, C++, C, C#, Kotlin, React, Django, Express.js, RESTful APIs.
Machine Learning & Data: PyTorch, TensorFlow, MySQL, OpenCV, Scikit-Learn, Spark, Redis, Kafka, RabbitMQ, Pandas.
Cloud, DevOps & Tools: AWS (EC2, EMR), Azure ML, Docker, Linux, GitHub, JUnit, Postman, CI/CD, Cryptography.

Professional Experience

Software Developer — Vancouver, Canada
HackHub - Funded by SFU VentureLabs — *Sep 2024 - May 2025*

- Architected an **end-to-end AI recruitment platform** adopted by industrial firms for **high-volume hiring**, automating resume ranking and interview process to **reduce manual HR screening time by 80%.**
- Engineered a secure, **asynchronous data pipeline** using **AES encryption** for resume content and **LLM integration with GPT API** to facilitate **real-time AI-led interviews** for thousands of concurrent applicants.
- Engineered a **Django backend** with **SSO** to store and manage interaction history between applicants and the AI assistant; leveraged **LLM-based interview grading** to allow HR teams to efficiently **rank and filter** large-scale candidate pools
- Optimized high-volume data handling via **MySQL indexing** and **Redis caching**, **improving system response times by 50%** and minimizing database overhead during peak hiring cycles.
- Built a responsive, **dual-sided React frontend** that enables seamless interaction for candidates applying to jobs and HR professionals reviewing AI-ranked shortlists via **RESTful APIs.**
- Established a **containerized CI/CD pipeline** with **JUnit** and **GitHub**, deploying on **AWS EC2** with **Docker** to maintain **99.9% uptime** for mission-critical hiring workflows.

Data Analytics Intern — Nanjing, China
Nanjing Nanyou Institute of Information Technovation CO.,Ltd. — *May 2021 - Aug 2021*

- Architected a **scalable data clustering pipeline** on **AWS EMR** to categorize **1M+ songs**, leveraging **PySpark** to transform raw audio metadata into **high-dimensional vectors** for **K-means clustering.**
- Optimized model performance by utilizing **Scikit-learn** for **Principal Component Analysis (PCA)** and **data visualization**. Reduced feature dimensionality to mitigate dataset skew and **improve the accuracy** of song categorizations.
- Engineered a **recommendation engine** by training a **TensorFlow model** on play histories and PCA-derived features, achieving **high-precision genre-based suggestions.**
- Deployed a **low-latency serving layer** on **Azure ML** using **gRPC**, facilitating **real-time recommendation delivery** that resulted in a **95% user satisfaction rate.**

Academic Project

Augmented Ambient Sound for Productivity and Mental Well-being — Research Assistant, SFU
PyTorch, Matplotlib, RabbitMQ, Librosa — *May 2024 - Sep 2024*

- Integrated **PANNS-based sound event detection** models to classify and enhance **ambient audio** (e.g., rainforest, cinematic soundscapes) as a therapeutic audio platform focused on sleep and productivity.
- Enhanced model robustness in high-noise environments via **fine-tuning** and **adaptive thresholding**, while migrating the backend to **AWS** to resolve legacy server bottlenecks and enable **100% processing scalability.**
- Directed **end-to-end deployment** of the cloud-based platform and conducted **user acceptance testing (UAT)** with 12+ participants; achieved a **90%+ usability score** and and validated therapeutic effectiveness.

Reddit Comment Popularity Prediction Model — Computational Linguistics, SFU
HuggingFace, PyTorch, Pandas, Scipy — *Jan 2024 - Apr 2024*

- Engineered a **high-volume NLP dataset** by extracting and normalizing **9 years of Reddit history** to **predict comment popularity based on post titles**; implemented **strategic sampling** of 10k+ high-engagement posts to address **class imbalance**.
- Fine-tuned a **BERT-based regression model** with a **custom MLP head**, utilizing **layer-freezing** to optimize training efficiency; achieved an **18% reduction in Mean Absolute Error (MAE)**.
- Conducted **feature importance analysis** to identify title length as a primary driver of engagement, leveraging these insights to develop a **scalable engagement prediction tool** for content optimization.