# Robert Reder

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## Education

**University of Toronto** Toronto, ON

*Bachelor of Science, Major in Mathematics, Statistics and Computer Science (Focus in Machine Learning)* *Expected May 2027*

## Experience

**Royal Bank of Canada** | *Machine Learning Data Engineer (Contract)* *May 2025 – Aug 2025 | Toronto, ON*

- Improved turnover prediction accuracy by **23%** by training **supervised deep learning models** (**transformers**) on 5+ years of historical fund data and market feeds, deployed on **AWS SageMaker**.
- Reduced fund performance processing time by **300%** by containerizing a turnover processor with **Docker** & **Kubernetes** in **Python/Pandas/SQL**, integrating ML forecasts into portfolio pipelines.
- Decreased report drafting time by **90%** by building a **retrieval-augmented generation (RAG)** system that paired tuned **LLMs** with internal fund documentation, served via a **AWS**-hosted **API**.

**Manulife** | *Software Engineer Intern* *Apr 2025 – Aug 2025 | Toronto, ON*

- Reduced onboarding query resolution time by **40%** by deploying a **Salesforce** copilot powered by tuned **LLMs** and **RAG** retrieval over policy docs, hosted on **Azure Functions** with **Docker**.
- Achieved **92%** classification accuracy in routing client requests by training **deep learning models** with **adapter-based fine-tuning** on anonymized onboarding data, cutting manual triage workload.
- Improved workflow efficiency for **50+** processors by building **Apex** features integrated with ML-driven data pipelines, ensuring synchronization between **Salesforce** and **PostgreSQL**.
- Increased ETL throughput by **35%** and eliminated 100+ weekly data errors by containerizing **SQL** workflows into an **Airflow DAG** using **Docker** & **Kubernetes** with automated data validation in the cloud.

**DeepCove Cybersecurity** | *Machine Learning Cybersecurity Intern* *June 2024 – Dec 2024 | Toronto, ON*

- Built, trained, and tested **deep learning models** in agent-based environments, enhancing model performance by **26%**.
- Utilized **LoRa** (Low-Rank Adaptation of LLMs) and **PEFT** (Parameter Efficient Fine-Tuning) to successfully fine-tune a pre-trained LLM, enabling it to accurately analyze cybersecurity logs and filter relevant issues with **87%** precision.
- Deployed clusters to manage data in **Elastic Search** using **Kubernetes** & **Docker**, improving data retrieval times by **42%**.

**Machine Learning Intern** | *UofT Machine Intelligence Student Team* *Feb. 2024 – June 2024 | Toronto, ON*

- Developed **LLMs** via **RAG** using **PyTorch** and **TensorFlow**, improving accuracy by **38%** on benchmark datasets.
- Created a **vector database** utilizing **FAISS** and **LlamaIndex**, enabling **21%** faster data retrieval.
- Implemented data cleaning algorithms, streamlining the processing of new data and ensuring models were updated with current text, resulting in a **14%** increase in response relevance.

## Projects

**Project Bergster** 🔗 | ***Winner of Google Student Developer Hackathon @ UofGuelph*** | *Next.js, AWS, Tensorflow, ML*

- **Created** a cognitive training, emotional detection robot operating using **Computer Vision** utilizing **Python, Tensorflow** & **FaceAPI.js**.
- **Ensured** offline functionality upheld **100% data privacy** and significantly reduced dependency on traditional therapy sessions, leading to a significant **decrease** in therapy-related costs for **educational institutions**.
- **Scaled** and **Implemented** Bergster as a research tool, now used by **30+ students** at my school.

**Vid2Notes** | *Python, JavaScript, HTML, CSS, Git, Django*

- Created a dynamic web tool that summarizes video transcripts, allowing users to study content efficiently through **Flashcards**, enhancing learning outcomes for **500+ users**.
- Integrated **YoutubeTranscript** and **Cohere GenText APIs** to automate transcript processing, streamlining the workflow and improving user engagement by **30%**.
- Configured the server and developed the website using **Django** and **Next.js**, ensuring responsive design and a seamless user experience across devices.

## Technical Skills

**Languages**: Python, Java, C++, C#, SQL, R, JavaScript, TypeScript, HTML, CSS, Swift, GoLang, Assembly, Kotlin, Ruby, Rust, Apex
**Frameworks**: React, Next.js, Flask, Django, Node.js, Angular, Express, Vue, Spring
**Libraries & ML/AI**: pandas, NumPy, Matplotlib, scikit-learn, PyTorch, TensorFlow, Keras, Hugging Face, Transformers, Torchvision, OpenCV, LangChain, FAISS, LlamaIndex, Mediapipe, Three.js, HTML2Canvas, PyInput, TailwindCSS
**ML Concepts & Techniques**: Reinforcement Learning, Supervised/Unsupervised Learning, Retrieval-Augmented Generation (RAG), Quantization, MLflow
**Developer Tools & Platforms**: Git, Docker, Kubernetes, AWS, GCP, Azure, Linux, UNIX, BASH, Maven, Visual Studio, PostgresSQL, MySQL, MongoDB, NoSQL, ElasticSearch, Spark, Hadoop, Tableau, Excel, Outlook, Figma, Photoshop, JIRA, Atlassian, Confluence, Agile, REST APIs
**Soft Skills**: Communication Skills, Leadership, Team Player, Motivation, Troubleshooting, Problem-Solving, Decision-Making, Attention to Detail, Agility
**Other**: Graphic Design, Video Editing, Tennis, Capital Markets, Derivatives