

Emiliano Garcia

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M.A.C. CANDIDATE | B.ENG. SOFTWARE ENGINEERING | EIT (ENGINEER-IN-TRAINING)

Graduate researcher specializing in applied machine learning and deep learning, with hands-on experience designing and developing models, training pipelines, and AI-driven systems across academia and industry. My work spans multimodal learning (speech, text, and auxiliary features), end-to-end experimentation workflows, and practical implementation of neural architectures for classification and prediction tasks. At Autodesk Research, I contributed to ML-powered data processing and modeling for complex real-world environments, while my master's research focuses on designing and evaluating deep learning pipelines through systematic experimentation and benchmarking. Engineer-in-Training (EIT) motivated by challenging research problems, rigorous empirical analysis, and building methods that translate into impactful real-world applications.

TECHNICAL SKILLS

Programming: Python, SQL, JavaScript, C++

ML & AI: PyTorch, TensorFlow/Keras, scikit-learn, Transformers, multimodal ML, CNNs, deep learning

Training & Evaluation: Cross-validation, ablations, explainability, hyperparameter tuning, robustness testing

Distributed & Systems: Slurm/sbatch (HPC), multi-GPU (DataParallel), Docker, Git, CI/CD

Data & Pipelines: Pandas, NumPy, preprocessing pipelines, embeddings, spectrograms, audio processing

Backend & Cloud: FastAPI, Node.js, AWS (EC2, S3, IAM), GCP

RELEVANT PROFESSIONAL EXPERIENCE

Computer Science and Physics, Wilfrid Laurier University, Waterloo, ON

September 2025 to Present

Graduate Research and Teaching Assistant

- Developing deep learning pipelines for multi-modal cognitive health assessment (speech, text, and auxiliary features) as part of master's thesis research.
- Designing preprocessing workflows (feature extraction, spectrograms, embeddings) and evaluating multiple neural architectures for multi-class classification and regression.
- Running systematic experiments, ablation studies, and tuning to improve accuracy and robustness; preparing manuscripts with supervisor.
- Supporting course instruction through grading, feedback, student guidance, and clarification of complex ML, data, and software engineering concepts.

Autodesk Research, Autodesk, Toronto, ON

May 2023 to September 2023

Software Developer Intern

- Led development of AI-driven optimization solutions for the Human-Centered Building Design (HCBD) initiative, integrating advanced data science methodologies with architectural analysis to enhance space utilization and occupant experience.
- Engineered robust data processing pipelines to transform raw architectural data into clean, analyzable datasets, implementing path-planning algorithms to model and visualize occupant movement patterns within building spaces.
- Developed a sophisticated machine learning tool that optimized architectural space allocation based on occupancy patterns, demonstrating strong proficiency in Python programming and scientific computing libraries.
- Applied geometry processing techniques and visualization tools to enhance data analysis workflows, enabling better understanding of spatial relationships in architectural designs.
- Effectively communicated project progress and findings through presentations to stakeholders, while maintaining detailed internal documentation to support knowledge sharing within the HCBD team.

Engineering Department, Thompson Rivers University, Kamloops, BC

May 2022 to January 2023

Undergraduate Research Assistant

- Collaborated with Department Chair Dr. Emad Mohammed on pioneering research investigating cognitive similarities between COVID-19 and Alzheimer's disease patients through advanced machine learning techniques and audio processing.
- Developed automated systems for transforming speech data into 2D frequency representations, enabling novel approaches to disease detection through computer vision techniques.
- Engineered and evaluated ensemble learning solutions combining multiple CNN architectures to optimize prediction accuracy for Alzheimer's disease detection from speech patterns.
- Designed and implemented machine learning models using clustering techniques to identify meaningful patterns in demographic and cognitive data.
- Contributed to research paper preparation through data analysis, methodology documentation, and visualization of key findings.

Enterprise Systems, Thompson Rivers University, Kamloops, BC

September 2023 to December 2023

Software Analyst Intern

- Developed automation solutions for the Enterprise Systems team, leveraging FormFusion and Argos tools to streamline data extraction and reporting processes from Oracle databases.
- Designed and implemented custom database queries and reporting workflows to meet complex institutional requirements, significantly improving efficiency of business operations.
- Optimized system integration between enterprise tools through automated data transformation pipelines, reducing manual processing time while ensuring data accuracy and compliance.

SELECTED PROJECTS

RAG Benchmark Service

Benchmark-driven retrieval-augmented generation system for scientific question answering

- Designed and implemented an end-to-end RAG system with evaluation-first development, defining retrieval metrics (Recall, nDCG, MRR) before deployment.
- Built multiple retriever baselines (BM25 and dense embeddings with FAISS) behind a unified interface, enabling controlled comparisons and gated promotion.
- Implemented reproducible indexing, artifact versioning, and scheduled evaluation workflows with drift detection and regression safeguards.
- Deployed a FastAPI service with monitoring, request logging, and CI-driven retriever promotion logic to demonstrate production-oriented ML discipline.

PocketGuide

Domain-adapted LLM for structured travel guidance with evaluation-first design and offline inference

- Developed a compact, domain-specialized language model optimized for structured JSON outputs, uncertainty signaling, and offline inference on consumer hardware.
- Implemented a teacher–student synthetic data generation pipeline with quality filtering to produce high-fidelity travel instruction data.
- Fine-tuned a 7B open-source LLM using parameter-efficient LoRA, with reproducible training configurations, checkpointing, and systematic evaluation.
- Designed evaluation benchmarks to assess factual consistency, instruction adherence, and robustness relative to the base model.
- Packaged the system for local inference with schema validation and failure analysis to support iterative model refinement.

EDUCATION AND CERTIFICATIONS

Master of Applied Computing

September 2025 to Present

Wilfrid Laurier University, Waterloo, ON.

- Recipient of the Laurier Graduate Scholarship, awarded for academic excellence.
- Appointed as Research Assistant under the supervision of Dr. Emad Mohammed, continuing prior research collaboration in machine learning and cognitive health.
- Appointed as Teaching Assistant, supporting undergraduate courses through grading and academic support.
- Fully funded master's program through Laurier Graduate Scholarship, Research Assistantship, and Teaching Assistantship, totaling \$52,000 in guaranteed funding.

Bachelor of Engineering in Software Engineering

September 2020 to April 2025

Thompson Rivers University, Kamloops, BC.

- Contributing author to pioneering research in cognitive disease detection using machine learning, awarded the Undergraduate Research Apprenticeship Grant for innovative methodology.
- Recipient of the Jorge Campos Award for outstanding academic achievement in software engineering.
- Consistently recognized on Dean's List for academic excellence.
- Completed two successful co-op work terms, gaining valuable industry experience at Autodesk and in enterprise systems.

Bicultural High School

August 2016 to May 2019

ITESM, Colima, Mexico.

- Led FIRST Robotics Competition team to multiple regional/world rankings and secured NASA sponsorship.
- Active in Student Government and Picosatellites Club; maintained 92/100 GPA on a 50% merit-based scholarship.

HONOURS, GRANTS, AND AWARDS

Author of a research paper exploring cognitive connections between Alzheimer's disease and COVID-19 using machine learning (submitted for review) in collaboration with Thompson Rivers University. Recipient of multiple awards and scholarships totaling over \$30,000, recognizing both academic excellence and research innovation.

• Undergraduate
Research
Apprenticeship Grant

• Jorge Campos
Scholarship recipient

• Academic Talent
Scholarship

• Dean's list on
multiple
occasions

OTHER PROFESSIONAL EXPERIENCE

Lululemon, Kamloops, BC

October 2024 to April 2025

Guest Experience Lead

- Directed daily store operations and coached team members to achieve sales and efficiency targets.
- Implemented structured feedback and training practices to foster collaboration and high performance.

Lululemon, Kamloops, BC / Waterloo, ON

April 2024 to Present

Educator

Walmart, Kamloops, BC

March 2021 to May 2023

Cashier / Customer Experience Salesfloor Associate