# MILKIYAS GEBRU

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LeetCode

## Education

**Master's in Software Engineering,** *Concordia University* 09/2026 – 08/2028
- Incoming Graduate Student

**B.Sc. in Computer Engineering,** *Addis Ababa University* 10/2018 – 06/2023
- **CGPA - 3.96/4** ( Awarded the Gold Medal for being the top scorer in the entire engineering campus)
- Relevant Courses taken:
  - Database - Software Engineering - Object Oriented Programming
  - Data structures - Computer Architecture and Organization

**Coding Academy,** *Africa to Silicon Valley* 12/2021 – 12/2022
- **Relevant Courses**: Dynamic Programming, Graphs, Greedy Algorithms, Divide and Conquer, Topological Sorting, Heuristic Searching, Segment Tree, Trie, Heap.
- Solved more than 900 Data Structures and Algorithmic problems in Leetcode .

## Research Experience

**Software Engineer and Research Assistant,** *McGill University* 01/2026 – Present
*Technologies: React.Js, Node.Js, Express.Js, Python*

- Currently developing website, and desktop application that calculates the wind response of a building for McGill Timber Structures Group.
- Converted complex Matlab codes to excel.

**Software Researcher,** *University of Illinois Urbana-Champaign* 05/2025 – 02/2026
*Technologies used: Python, Linux, Pandas, Major*

- I got accepted to the UIUC+ summer research program of 2025; only 103 out of 1370 applicants were selected after rigorous evaluation.
- The research area is on mutation testing, specifically using LLMs to detect equivalent mutants and is led by Prof. Darko Marinov.
- Prepared and delivered presentation on mutation testing and the research paper "LLMorpheus: Mutation Testing using Large Language Models".
- Wrote tests to kill mutants and used LLMs to produce tests.
- Created a script that would inject the newly created test into an existing test suite.
- Generated mutants for several defects4j projects using **Major** mutation testing tool.
- Reconstructed mutants from the generated mutants.log and actually compared them with the mutants generated using Major.
- Extracted the mutants used in the research papers "Equivalent Mutants in the Wild: Identifying and Efficiently Suppressing Equivalent Mutants for Java Programs" and "LLMorpheus: Mutation Testing using Large Language Models" using Abstract Syntax Trees.
- Evaluated some of the effectiveness of the LLMs and strategies proposed in the research paper "Large Language Models for Equivalent Mutant Detection: How Far Are We?" on the mutants extracted from the above research papers.

**Research Assistant,** *University of Michigan* 05/2022 – 07/2022
*Technologies: Python, NumPy, Pandas*

- Research Title—Benchmark Suite for Explainable AI.
- Conducted a 3-month-long research project focusing on finding different benchmark suites for comparing different AI models explainers under the mentorship of Prof. Valeria Bertacco and Dr. Andrew McCrabb.
- Trained different AI models ranging from decision trees to neural networks using numerical, categorical, and image datasets.
- Explained the models' predictions using LIME, SHAP, and Anchor.
- Compared the different AI explainers using different qualitative, and quantitative measures, including runtime, and fidelity.
- Presentation Link **- BeXAI**
- Website Link - BeXAI
- Github Link - BeXAI

## Work Experience

**Software Developer,** *Holistic Technologies* 10/2023 – 03/2025
*Technologies : Python, BeautifulSoup, Selenium, WordPress, HTML, CSS, JavaScript, Git, Linux*

- Automating of Instagram and Threads Posts using Selenium reducing manual effort by 80%.
- Developed a system to automate WordPress article publishing through CRON jobs
- Responsible for managing and maintaining their VPS server.
- Developed the entire frontend for the company blog site, improving page load speed by 30% and enhancing user engagement.
- Integrated a seamless payment system into the company blog website using Stripe, ensuring secure and efficient transaction processing.

**Software Developer and Head Of Education,** *Africa to Silicon Valley (A2SV)* 03/2023 – 01/2025
*Technologies : Python, Golang*

- Created automation scripts in Apps Script and Python to automate students' progress tracking on different learning platforms, reducing the time required from hours to minutes.
- Provided training to 30+ backend development students in GoLang and clean architecture principle.
- Delivered 10+ comprehensive lessons on data structures and algorithms to over 30 students, covering topics like dynamic programming and graph theory.

**Backend Engineer,** *A2SV, (Rate Eat)* 08/2022 – 09/2022
*Technologies : NodeJs, ExpressJs, MongoDB, Git*

- Contributed to the backend development of RateEat.app (a Micro Yelp application) using NodeJs and MongoDB.
- Worked on the upvoting and downvoting functionality of business reviews.
- Implemented the CRUD operations of business reviews.
- Worked Unit testing with Jest to make the code bug free.

## Awards

**Recognition of Gold Medalist,** *Addis Ababa University* 19/07/2023
Awarded the Gold Medal for being the top scorer in the Addis Ababa Institute of Technology(Engineering Faculty of Addis Ababa University)

**Executive Committee of IEEE student branch Of Ethiopia,** *IEEE*
Awarded to the top scores in Addis Ababa University.

**Seeds for the Future of 2021,** *Huawei*
Certificate of Completion Link - SeedsForTheFuture

## Skills

- **Programming Languages**: JavaScript, TypeScript, Python, C++, GoLang
- **Frontend** - ReactJs, TailwindCss, HTML, CSS, Next.Js
- **Backend** - Node.Js, Express.Js, Go Gin, FastAPI
- **Databases** - MongoDB, PostgreSQL, MySQL
- **Databases ORM** - Mongoose, Sequelize
- **Version Control** - Git

## Certificates

- Supervised Machine Learning: Regression and Classification
- Advanced Learning Algorithms
- Getting Started with Deep Learning

## Languages

**English**
- IELTS Score: 8