

Riasat Mahbub

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[X](#) GitHub [in](#) LinkedIn

Software engineer focused on full-stack systems, developer tooling, and applied ML. Professional experience building web/mobile products, alongside graduate research in software engineering and large-scale repository analysis.

Skills

Programming Languages: TypeScript, JavaScript, Python, PHP, SQL, C++

Frontend: React Js, Angular, Ionic, Astro, Next.js, Tailwind CSS, HTML/CSS

Backend: Express JS, Laravel, FastAPI, Adonis Js, Firebase, PostgreSQL, MongoDB, Sqlite

DevOps & Tooling: Git, Docker, GitHub Actions, Vite, Netlify, Linux

AI/ML: PyTorch, TensorFlow, scikit-learn, Keras, llama.cpp, ollama, Pandas

Experience

Research Assistant

September 2023 – October 2025

Dalhousie University

- Conducted empirical software-engineering research across 482 open-source repositories, studying code quality and refactoring in simulation systems.
- Co-authored research presented at IEEE SCAM 2024 and TRB 2026, using static-analysis and repository-mining pipelines to analyze 482 open source repositories.
- Furthered development of in-house simulation software made with legacy C# and .NET by addressing code quality concerns and contributing to implementing critical features.

Associate Software Engineer

July 2022 – August 2023

Brain Station 23

- Engineered and shipped full-stack web and mobile features using Angular, Laravel, and Ionic across projects.
- Provisioned Linux environments and deployed containerized applications using Docker, Git and CI/CD pipelines.
- Developed custom Moodle and WordPress plugins, including an Ionic mobile interface designed to parse and structure Moodle HTML outputs.
- Maintained application reliability and reduced technical debt by authoring unit and integration test suites across legacy and new codebases.

Projects

Aergia CV Builder

[Github](#)

April 2026

- Built a self-hosted full-stack CV platform for reusable career library, application tracking, PDF import/export, and tailored resume generation using Tanstack start, React, FastAPI and Playwright.
- Developed a customizable document engine with drag-and-drop editing, multiple templates, and synchronized live preview and PDF rendering.
- Built a local requirement-analysis pipeline using GLiNER2 to match job requirements against candidate evidence and generate editable, tailored CVs.

FastAPI Docker React Tanstack Vite PlayWright SQLite

Project Tracker Extension

[Github](#)

January 2026

- Built a persistent knowledge-graph system for AI coding agents, linking bugs, features, tasks, decisions, affected files, dependencies, and backlinks across a codebase.
- Developed a CLI for creating, updating, searching, validating, rebuilding, and repairing project state, with generated dashboards and machine-readable graph output.
- Implemented BM25, fuzzy, regex, and exact-phrase search to help agents retrieve relevant project context before making code changes.

Python Information Retrieval BM25 Knowledge Graphs PyYAML JSON

MBuddy

GitHub ↗
August 2026

- Built a local manga/anime recommendation engine that turns free-form queries into ranked recommendations across 289,000+ titles.
- Designed a custom RAG pipeline that unifies community data from five major anime and manga databases into a common recommendation dataset.
- Combined semantic embeddings, metadata signals, and textual search in a hybrid retrieval pipeline for more context-aware recommendations.

FastAPI Jupyter SQLite Python Huggingface SQLite-vector Docker

Education

Master of Computer Science

September 2023 – October 2025

Dalhousie University

Bachelor of Computer Science and Engineering

January 2018 – January 2022

BRAC University

Research

Understanding code smells and refactoring practices in simulation modelling systems

October 2025
Paper ↗

Masters Thesis

- Conducted two large-scale empirical studies across 482 open-source simulation and traditional repositories covering code smell prevalence, evolution, and refactoring effectiveness.
- Found that method-level refactoring introduces more code smells than it removes, while overall refactoring activity reduces structural and cyclomatic complexity over time.

Exploring Code Smells In Simulation Systems: Effectiveness, Risks And Impacts

January 2026

2026 TRB Annual Meeting

- Studied refactoring effectiveness and risk across 104 simulation and 272 traditional GitHub projects and found that refactoring removed about 35% of Implementation, Design, and Architecture smells.
- Found that refactoring reduced structural and cyclomatic complexity, while method-level changes introduced 2.5× more code smells than they removed.

On the Prevalence, Evolution, and Impact of Code Smells in Simulation Modelling

December 2024
Paper ↗

IEEE International Conference on Source Code Analysis & Manipulation 2024

- Used the Designite static analysis tool to detect code smells across 155 simulation and 327 traditional GitHub projects.
- Found that while Long Statement and Magic Number smells are more prevalent in simulation software, there is no significant association between code smells and bugs in simulation systems.

City Recommender System: A Comparative Study of AI-Driven Approaches

November 2024
Paper ↗

Future Technologies Conference (FTC) 2024

- Built a personalized city recommendation system using population, income, and weather data to rank U.S. cities against individual preferences.
- Compared logistic regression, SVM, and Naïve Bayes against a custom neural network, which achieved the highest test accuracy at 93.3%.

Neural Network Architecture for the Classification of Alzheimer's Disease from Brain MRI

December 2021
Paper ↗

IEEE TENCON 2021

- Designed a 14-layer neural network architecture for Alzheimer's Disease diagnosis from MRI scans on ADNI-1, a benchmark MRI dataset for Alzheimer's research.
- Achieved 87.06% accuracy and an AUC of 0.93 classifying Alzheimer's Disease against Normal Control cases.