

Mahta Ghorbanian

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Summary

Software Engineer with 2+ years of experience in C#, Java, and Python. Proven ability to lead complex projects, including architecting a C# system from scratch for a research initiative; this involved integrating dual applications, building interactive UI components, and significantly optimizing code change detection. Passionate about solving complex problems, learning new technologies, and delivering impactful technical solutions.

Skills

Languages: C#, Java, Python, C, JavaScript, SQL, HTML/CSS

Databases: MySQL, PostgreSQL

Desktop and Web Frameworks: .NET (WPF/WinForms), Django, React

Methodologies: Agile (Scrum, Kanban), Object-Oriented Design (OOD), Unified Modelling Language (UML)

Testing and Automation: Playwright, Selenium, Cypress, Unit Testing (JUnit)

Data Analysis: Tableau, Power BI, Excel, NumPy, Pandas

Tools and DevOps: Git, GitHub Actions (CI/CD), Visual Studio, Android Studio

Technical Specializations: Desktop Application Development, Research Engineering, Code Optimization, Debugging

Experience

Software Research Engineer, LSMR (University of Calgary)

Calgary, CA 2022 – 2026

- Architected and developed a complex integration from scratch, connecting an academic research tool with an industrial C# Windows Forms application.
- Designed and implemented the core integration architecture using the Mediator design pattern to ensure a loosely-coupled, maintainable, and high-performance system.
- Engineered 4 key interactive UI components in C# and Windows Forms for complex change impact analysis.
- Developed a key workflow automation feature to export analysis results directly to Jira, automatically creating Epics/Stories and calculating Story Points based on Cyclomatic Complexity.
- Validated system effectiveness via quantitative analysis, improving the change impact detection rate (Recall) from 21.8% to 48.2%, a 2.2x increase over the baseline system.
- Led the project lifecycle from architectural design to implementation, presenting proposals and collaborating with supervisors to meet all research and industry goals.

Teaching Assistant, University of Calgary

Calgary, AB

Courses: [DATA 201](#) | [SENG 300](#) | [CPSC 217](#) | [CPSC 219](#) | [CPSC 251](#) | [CPSC 351](#)

2021 – 2026

- Led tutorials in Python and data analysis for over 160 students, focusing on data visualization tools like Tableau and Power BI.
- Instructed over 120 students in core software engineering principles, including object-oriented design using UML.
- Facilitated sessions on theoretical foundations, including discrete mathematics, logic, and computational complexity.
- **Conducted code reviews** for student projects, providing detailed feedback to **improve code quality, readability, and performance**.
- Mentored students in applying Python programming and data analysis concepts to real-world datasets.
- Worked with professors to align tutorial content with lecture materials and course objectives.

Education

M.Sc. University of Calgary, Computer Science

- **Relevant Courses:** Fundamentals of Social Network Analysis and Data Mining,

B.Sc. Ferdowsi University, Software Engineering

- **Relevant Courses:** Data Structures, Object-Oriented Programming, Database Systems

Projects

Deprecated API Analysis Tool

- Engineered a data-driven tool to analyze API deprecation patterns across 40 Java projects.
- Leveraged Java for data extraction, Python for statistical analysis, and SQL for efficient data storage.
- Generated actionable insights on API usage trends, enabling project owners to optimize their codebases and improve software maintainability.
- Tools Used: Python, Java, SQL

Notes Web Application

- Implemented user registration and login functionality using Django and React, connected via a REST API.
- Developed features for users to add and delete notes, showcasing full-stack capabilities.
- Tools Used: JavaScript, Python, Django, React

Quick-MCLS

- Implemented Quick-MCLS, a novel algorithm for the multiple longest common subsequence problem based on a 2012 paper of the same name.
- Tools Used: C

Smart House Android App

- Engineered a persistent TCP Socket connection to facilitate reliable, bi-directional communication between the Android client and hardware modules.
- Developed real-time data logic to monitor and process incoming sensor data from smart home nodes.
- Implemented a low-latency control system for lighting, ensuring 100% delivery of commands through TCP acknowledgment and error handling.
- Tools Used: Java, Android Studio, TCP Socket Programming, Multi-threading.

Bombs and Stars Game

- Designed and created an interactive game with user-controlled characters.
- Used Java Swing to build an engaging and responsive user interface.
- Tools Used: Java, Java Swing

Certificate

Introduction to SQL, Intermediate SQL, Joining data in SQL, Introduction to Power BI, Introduction to DAX in Power BI, Understanding data visualization

- Data Camp ([Data Camp - Portfolio](#))

Data Analyst Associate

- Data Camp ([Certificate](#))

Software Engineering Job Simulation

- Electronic Arts ([Certificate](#))

Product Management Job Simulation

- Electronic Arts ([Certificate](#))

Hobbies and Volunteer Activities

Outside of work, I'm passionate about exploring new things and embracing challenges. I love being creative through drawing and painting, and staying active with paddleboarding and cycling. My biggest joy is animal welfare; I've had the pleasure of fostering four kittens and one puppy, and I'm the happy parent to my rescued cat, Panbeh.