

MASFIQ REZA

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SUMMARY

MS Computer Science student at Colorado State University (GPA 3.92) building tested backend and data software in Python and C#: pharmacy services in FastAPI, ASP.NET Core, and PostgreSQL with concurrency safe transactions, CI, and over 95% test coverage, plus ETL pipelines and deep learning on large geospatial datasets. Background in test automation, university teaching, and five research papers including WACV 2027.

EDUCATION

Colorado State University, Fort Collins, CO Expected May 2027
Master of Science in Computer Science GPA: 3.92/4.00
Coursework: Natural Language Processing, Artificial Intelligence

BRAC University, Dhaka, Bangladesh 2018 to 2022
Bachelor of Science in Computer Science and Engineering CGPA: 3.80/4.00
Coursework: Data Structures, Algorithms, Object Oriented Programming, Database Systems
VC's List (3 times), Dean's List (5 times), University Merit Scholarship and Stipend

TECHNICAL SKILLS

Languages: Python, C#, Java, C++, C, JavaScript, SQL, Bash, HTML, CSS
Backend and Web: FastAPI, ASP.NET Core, Entity Framework Core, SQLAlchemy, Alembic, Django
Databases: PostgreSQL, MySQL, SQLite
Testing and DevOps: pytest, xUnit, Selenium, TestNG, Postman, JMeter, Git, GitHub Actions, Docker
Data and ML: Pandas, NumPy, scikit-learn, PyTorch, Parquet, ETL pipelines, data validation, Linux
Geospatial and HPC: GeoPandas, rasterio, NASA GEDI LiDAR, HLS imagery, Sentinel 1 SAR, SLURM

PROJECTS

Pharmacy Order Fulfillment Service | *Python, FastAPI, PostgreSQL, Docker* GitHub
· Built a central fill pharmacy backend with a heap based priority scheduler and an order state machine whose every transition is written to an audit log in the same database transaction
· Prevented overselling with atomic conditional stock updates and database constraints; a test firing 20 simultaneous requests at stock for 7 orders yields exactly 7 fills and zero negative stock
· Load tested at about 330 orders per second (p95 under 108 ms); in a simulated 8 hour day, emergency orders waited about 18 times less than routine ones; 102 tests at 98% coverage run in GitHub Actions

Drug Lookup and Inventory API | *Python, FastAPI, PostgreSQL, Pandas* GitHub
· Built an idempotent ETL pipeline loading 138,427 FDA drug records into a normalized PostgreSQL schema, logging all 5,366 data quality issues with reasons instead of silently dropping rows
· Added typo tolerant search with trigram indexes, cutting fuzzy name search from 488.8 ms to 4.7 ms (104 times faster); other indexes sped up ingredient and expiry queries 33 and 82 times
· Implemented first expiring, first out dispensing with row locks inside transactions; 87 tests at 97% coverage

Pharmacy Inventory API in C# | *C#, ASP.NET Core, EF Core, SQLite, xUnit* GitHub
· Built a layered REST API (Api, Core, Data) using dependency injection and repository interfaces, keeping business rules free of database code
· Wrote lot dispensing as a pure function inside transactions, with ProblemDetails errors and a daily expiry alert
· 59 xUnit unit and integration tests (WebApplicationFactory) at 95.8% line coverage, run in GitHub Actions

Colorado Inequality Data Harmonizer | *Python, FastAPI, Streamlit, GeoPandas* GitHub

- Built an ETL pipeline merging five federal sources (ACS, HMDA, USDA Food Access Atlas, CDC PLACES, Census Gazetteer) into one 130 column table covering all 1,447 Colorado census tracts
- Wrote 23 automated validation checks and a generated data dictionary; reconciled 2010 and 2020 tract boundaries with documented fallbacks instead of dropping the 27% of redrawn tracts
- Served the versioned feature set through a FastAPI backend to a Streamlit dashboard with a live map

Aboveground Biomass Estimation, MS Thesis | *Python, PyTorch, SLURM, GeoPandas*

- Building a deep learning regression pipeline fusing sparse NASA GEDI LiDAR with Harmonized Landsat Sentinel imagery, Sentinel 1 radar, and gridMET climate data
- Running data processing and model training jobs on CSU's Falcon HPC cluster with SLURM and Bash

EXPERIENCE

Colorado State University

Aug 2026 to Present

Graduate Research Assistant, AI Ready Inequality Data Hub

Fort Collins, CO

- Building Python ETL pipelines that clean, join, and validate federal socioeconomic data for Colorado census tracts

Colorado State University, Office of the Vice President for Research

Sep 2026 to Present

Research Computing Support Technician

Fort Collins, CO

- Helping researchers get started on CSU's HPC systems and improve their Linux, SLURM, Python, and Bash workflows
- Supporting test driven development of HPC tools and sponsored research projects that need computing and storage services

Colorado State University

Aug 2024 to May 2026

Graduate Teaching Assistant

Fort Collins, CO

- Supported labs and recitations for Operating Systems, Modern Cybersecurity, and Modern Web Development
- Wrote autograder scripts and gave detailed, rubric based feedback on assignments and exams
- Held office hours debugging student programs in C, C++, and Python on Linux, and taught Git workflows

Uttara University

Feb 2023 to July 2024

Lecturer, Computer Science

Dhaka, Bangladesh

- Taught undergraduate CS courses, built course materials, and graded assignments and exams

BJIT Limited

Nov 2022 to Feb 2023

Trainee Software Engineer (SQA Automation)

Dhaka, Bangladesh

- Built automated UI test suites in Java with Selenium and TestNG for web applications
- Designed and executed test scenarios for API testing (Postman) and load testing (Apache JMeter)

BRAC University

Jun 2021 to Apr 2022

Student Tutor

Dhaka, Bangladesh

- Taught Data Communications and introductory programming; graded and supported lab sections

PUBLICATIONS

- T. B. Faruk, **K. M. Reza**, S. Pallickara, and S. L. Pallickara, "RSPDBench: Benchmarking Vision Foundation Models on Earth Observation Tasks Under Physically Grounded Remote-Sensing Product Degradations," *IEEE/CVF WACV*, 2027. (Accepted)
- M. A. Hannan, M. H. Rakib, **K. M. Reza**, and F. Santos, "Contribution History as a Key Feature in OSS Task Recommendation: An LLM-Based Empirical Study," *ACM/IEEE ESEM*, 2025.
- M. Zubair, M. N. I. Mahee, **K. M. Reza**, M. S. Salim, and N. Ahmed, "Climate Data Dynamics: A High-Volume Real-World Structured Weather Dataset," *Data in Brief*, vol. 57, art. 111156, 2024.

- M. M. A. B. Atique, M. I. Bappi, K. Kim, K. Choi, M. M. Ahamad, and **K. M. Reza**, “Impact of COVID-19 on Bangladeshi University Students’ Mental Health: ML and DL Analysis,” *medRxiv*, 2024. (Preprint)
- R. Mahbub, M. A. Azim, N. I. Mahee, Z. I. Sanjid, **K. M. Reza**, and M. Z. Parvez, “Neural Network Architecture for the Classification of Alzheimer’s Disease from Brain MRI,” *IEEE TENCON*, 2021.