

Sa'ad Farooq

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EDUCATION

University of Waterloo

Bachelor of Mathematics, Combinatorics and Optimization

Relevant Coursework: Logic and Computation, OOP, Elementary Algorithm Design, Optimization, Statistics.

Waterloo, Ontario

Sept. 2023 – Present

EXPERIENCE

Software Engineer CxE

Böhringer Ingelheim

April 2026 – Present

Burlington, Ontario

- Built and deployed scalable data-driven applications using Python, SQL, and APIs, enabling Commercial Excellence teams to automate decision-making workflows and improve operational efficiency.
- Drove end-to-end development of an AI/ML-powered pilot product (Agile), translating UX research and business requirements into production-ready features, reducing manual analysis and accelerating insight generation.
- Partnered with cross-functional and global stakeholders to define technical requirements, design system architecture, and deliver high-impact solutions, while documenting and operationalizing tools for long-term adoption.

CS115 Instructional Support Assistant

University of Waterloo

Sept 2025 – Dec 2025

Waterloo, Ontario

- Developed robust developer tooling for large codebases, including recursive-function detection, illegal API usage scanning, and semantic filtering of helper functions versus test-only code-handling edge cases such as lambda expressions, local scopes, and partial student submissions.
- Owned the full lifecycle of internal tooling, from requirements gathering and design through debugging, documentation, and deployment, collaborating with instructors and ISAs to evolve grading infrastructure and ship workflow improvements that were reused across assignments and future terms.
- Built a production-scale automated grading system in Python and Bash, integrating static code analysis, test-result parsing, and MarkUs CLI automation to process hundreds of student submissions per assignment with deterministic, reproducible grading outcomes.

Systems & Data Analyst

Linamar Corporation

May 2024 – Aug 2024

Guelph, Ontario

- Automated reporting workflows using Excel VBA and SQL, saving 35+ hours/month and accelerating month-end close timelines by 30%.
- Built Power BI dashboards tracking \$10M+ in accounts payable and operational KPIs, improving reporting accuracy and decision-making speed.
- Processed and reconciled 1,000+ vendor invoices and developed 12-week rolling cash flow models, reducing discrepancies by 22% and optimizing liquidity planning.

PROJECTS

Hospital Appointment Optimizer | *Python, Pandas, XGBoost, Gurobi, Scikit-learn*

Feb 2026 – Present

- Engineered a no-show prediction pipeline over 111k clinical appointments, performing temporal train/test splitting and rolling patient-level feature construction to prevent data leakage.
- Formulated two Gurobi LP/IP models, a knapsack-based reminder allocation model and a patient-slot assignment model, to maximize schedule utilization without overbooking.

Gurobi Graph Converter | *Python, Gurobi/Gurobipy, Linear Programming, NetworkX*

Jan 2026 – Present

- Developed a Python tool to convert graph problems into Gurobi-compatible linear programs, enabling automated optimization for transshipment and network flow problems.
- Streamlined LP formulation and analysis workflow, reducing manual errors and improving reproducibility for diverse graph instances.

TECHNICAL SKILLS

Languages: Python, SQL, R, C/C++, Bash/Shell, MATLAB, HTML/CSS

Libraries & Tools: Pandas, NumPy, Scikit-learn, XGBoost, Gurobi/Gurobipy, NetworkX, OpenCV, MarkUs CLI

Data & BI: Power BI, JupyterLab, Excel

Developer Tools: Git, GitHub, Linux, LaTeX, Valgrind, GDB