Anas Alhadi

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EDUCATION

Dalhousie University   Jan. 2021 – May. 2025
Bachelor of Computer Science - First Class Honours - GPA: 3.93/4   Halifax, NS

EXPERIENCE

Research Assistant - Dalhousie University   Halifax, NS
Succinct Data Structures - KeBaB ([Paper](), [Code]())   Sep. 2024 – May. 2025
- Engineered the core logic for KeBaB, an improved string matching algorithm for detecting maximum exact matches in genome sequences, achieving 50% faster runtimes through the use of probabilistic structures.
- Automated code validation and performance profiling through a custom Python suite, accelerating feedback cycles and enabling faster development iterations.
- Delivered a complete and tested implementation of KeBaB in under 6 weeks, meeting the deadlines for the journal submission of our research paper.
- Diagnosed and resolved extremely rare bit-level bugs that occurred in less than 1% of the datasets, by leading pair programming debug sessions and verifying program state at each step.

IoT Network Compression - Dynamic Rule Updating([Paper](), [Code]())   Apr. 2024 – May. 2025
- Led research efforts aimed at improving the performance of an IoT network compression protocol (SCHC) to reduce power consumption of low power devices.
- Improved SCHC's compression ratios by up to 20%, through the integration of scheduling algorithms into its rule selection scheme.
- Delivered the improved rule updating support to esp32 devices by integrating the algorithm into existing implementations of SCHC in the RIOT-OS network stack.
- Configured a linux-based emulation enviroment used to stress test the SCHC modifications, with 1500 different testing scenarios, ensuring a correct and robust implementaion.

Teaching Assistant - Dalhousie University   Halifax, NS
                                                                                                  Apr. 2024 – May. 2025
- Took initiative to manage the creation and grading of coding assignments for 300 students per semester.
- Automated the grading process by designing and deploying CI/CD pipelines on GitLab via YAML scripts that would run tests on student submissions.
- Reduced grading time from hours to minutes by using Bash scripts that would retrieve submission states through the GitLab API and generating CSV files for direct upload to the university portal.
- Provided academic support and mentoring through consultation sessions.

PROJECTS

Live Lyric Translation | *NodeJS, AWS*
- Designed and launched a SaaS web service that provided realtime lyric translation to songs currently playing on a client's Spotify account, displaying the translated lyrics on a webpage.
- Integrated the use of AWS Lambda to query AWS Translate providing universal translation, with background caching of frequently accessed lyrics in S3, significantly reducing translation costs.

SKILLS

Languages: Python, Java, C++, JavaScript, C, Rust, SQL, LaTeX, HTML
Developer Tools: Git, Docker, WireShark, Makefile, AWS, GDB, CI/CD Pipelines
Frameworks: REST API, Flask, Node.js, HTMX, Tailwind

AWARDS

Dean's List: Awarded each semester to students with a high GPA; achieved in 10 semesters.

Oman MoHE Scholarship: 4 years of paid university tuition, awarded to the top performing high scool students.