

Anas Alhadi

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EDUCATION

Dalhousie University

Bachelor in Computer Science - First Class Honours - GPA: 3.93/4

Jan. 2021 – May. 2025

Halifax, NS

EXPERIENCE

Research Assistant - Dalhousie University

Halifax, NS

Succinct Data Structures - KeBaB (Paper, Code)

Sep. 2024 – May. 2025

- Developed the core program logic for KeBab, an improved string matching algorithm for finding maximum exact matches between a patient's DNA sequence and a large reference dataset.
- Implemented performance optimizations through the use of probabilistic data structures and selective hashing in C++. Resulting in speedups of up to 50% compared to the current industry standard algorithms.
- Built an automated testing and profiling suite in Python, which provided a quick feedback loop for any changes applied to the KeBab algorithm, resulting in a more efficient development cycle.
- Delivered a complete and tested implementation of KeBab in under 6 weeks, meeting the deadlines for the journal submission of our research paper.
- Delivered program patches fixing extremely rare bit-level bugs that occurred in less than 1% of the datasets, by leading pair programming debug sessions facilitating step-by-step verification of the program.

IoT Network Compression - Dynamic Rule Updating (Paper, Code)

Apr. 2024 – May. 2025

- Lead 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 environment used to stress test the SCHC modifications, with 1500 different testing scenarios, ensuring a correct and robust implementation.

Teaching Assistant - Dalhousie University

Halifax, NS

- Managed the creation and grading of coding assignments for 300+ students per semester. Apr. 2024 – May. 2025
- Automated the grading process by Designing and deploying CI/CD pipelines on GitLab via YAML scripts that would run tests on student submissions.
- Streamlined the grading workflow by introducing Bash scripts that made use of the GitLab API to retrieve students' submission status and outputting them into a CSV file. Reducing time needed to perform the task from multiple hours to a few minutes.
- Provided academic support and mentoring through consultation sessions.

PROJECTS

Live Lyric Translation | NodeJS, AWS

- Designed and launched a SaaS webservice 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 serverless Lambda to query AWS Translate providing universal translation, with background caching of frequently accessed lyrics in S3 buckets, significantly reducing cost from repeated translations.

SKILLS

Languages: Python, Java, C++, JavaScript, C, Rust, SQL, LaTeX, HTML

Developer Tools: Git, Docker, WireShark, Makefile, AWS, GDB, CI/CD Pipelines

Frameworks: RestAPI, Flask, Nodejs, 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 highschool students.