Liam Kelly

Ottawa, ON

Assets

Development: C, C++, Java, Spring, JUnit, Node.js, SQL, React, Bash, Python (numpy, pandas), HTML/CSS, JavaScript
Tools: Git, Maven, Artifactory, Postman, Jira, Eclipse, IntelliJ, VS Code, Docker, WireShark, QNX, Jupyter
OS: Linux, Windows
Security Clearance: Top Secret (Level III)

Work Experience

Systems Engineering Intern, Royal Canadian Mounted Police – Ottawa, ON *May 2024 - December 2024*

- Researched and developed protocols, algorithms and API routes for client-server applications using Linux, Python and Mongoose Embedded Web Server
- Enhanced web application security by developing hash-based message authentication codes for session tokens using OpenSSL
- Developed a role-based access control layer to improve security by creating hashed user databases with SQLite and by writing middleware for authorization checks and rerouting unauthorized requests to secure endpoints
- Debugged Wi-Fi dongle disconnections by analyzing Linux kernel logs to ensure configured power management settings, correct driver installations and resolve USB soft-blocks
- Investigated the behaviour of IoT devices on wireless LAN by configuring network devices including routers, access points and Network Interface Controllers
- Redesigned front-end functionality using jQuery by implementing dynamically generated data tables to improve the granularity of task selection, allowing users to filter, sort, and select options more effectively
- Optimized the handling of multi-gigabyte JSON file uploads by implementing background threads to parse and store data asynchronously
- Engaged with clients and gave regular updates to managers by conducting demos and presentations, setting up deployments and writing detailed documentation for developed tools
- Studied the architecture and operation of communication protocol stacks, including 5G, LTE, Wi-Fi and Bluetooth

Fullstack Engineering Intern, Public Services and Procurement – Ottawa, ON *May 2023 - August 2023*

- Revitalized a legacy Struts server by refactoring outdated components, testing database access layers, and enhancing documentation
- Reviewed and drafted UML documentation for additions to server functionality
- Designed and implemented an import feature using JSP and Java by leveraging the factory pattern to dynamically parse and process uploaded files
- Redesigned application databases using SQL by analysing data samples and following normalization and relationship rules to create efficient storage solutions for user data
- Improved the server application by designing and implementing data access layers and creating new REST API routes to enhance functionality
- Attended daily SCRUM meetings to update the team on sprint progress and maintained repositories with SVN

Backend Engineering Intern, Canadian Banknote Company – Ottawa, ON *September 2022 - December 2022*

- Performed server configuration on Spring image processing applications to support many property files and resources for quick modification during prospective client demos
- Tested server functionality using SOAPUI by analysing HTTP responses for data conformity and serialization
- Developed a SOAP-based middle tier with Jakarta to abstract communication with a processing server
- Wrote unit tests using JUnit and Mockito to address gaps in test coverage of server endpoints like invalid query parameters and corrupted image files
- Used Artifactory to update JAR and WAR packages for use by other developers within the company

Teaching Assistant, Carleton University – Ottawa, ON *January 2023 - December 2023*

- Assisted in teaching undergraduate coursework on the C programming language by providing support to students to reinforce concepts such as pointers, memory management, and data structures

Education

Carleton University – BSc in Computer Science (Honours) *May 2025*
Courses: Computer Vision, Pattern Synthesis, GIS Algorithms and Analysis, Object-oriented Design, Real-time Design