Johan Yim

Software Engineer

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Experience

2024-05 Present
Software Engineer BG Automotive

- Implemented stateless, secure authentication using `JWT`s stored in HTTP-only cookies, with access and refresh token rotation for session management.
- Implemented HTTP middleware in `Rust` using `Redis` as an intermediary cache layer, Server-Sent Events, and frontend Virtualization/Windowing to handle payloads 600 times larger.
- Developed a silent background process that monitors key presses and recognizes barcode syntax, triggering image capture from the warehouse CCTV system.
- Applied systems programming concepts, including mutex-based synchronization, to prevent race conditions and manage concurrent write operations.
- Used `cron`, the GNU coreutils, and `git` to create an automated deployment pipeline for various automated services.
- Deployed 10 containerized cloud applications optimized for resource efficiency, achieving reliable operation on a single low-tier cloud instance.
- Interfaced with the `xlsxwriter` C library to programmatically generate non-trivial excel spreadsheets, such as spawning charts and extracting/including VBA macros at compile time.

2024-03 2024-05
Volunteer Data Assistant Bath Royal Literary and Scientific Institution

- Used text-manipulation tools from the GNU coreutils such as `awk` and `sed` to process and clean existing tabular data.

Projects

Structure-Preserving Encryption and Decryption johanyim/spead

- Implemented key derivation with `Argon2` algorithm to derive cryptographically strong keys to mitigate brute-force and GPU-based attacks.
- Applied Format-Preserving Encryption (FPE) to encrypt and decrypt structured data without altering data formats or types, reducing the effect of encryption on data type validation.
- Combined concepts from JSON traversal/pointers (RFC 6901) with nonce selection to produce deterministic encryption, while resisting ciphertext-equality attacks.

Education

2019-09 2023-05
Computer Science MComp (Hons) University of Bath

Degree Class awarded: 2:1 - Functional Programming (82%) - Machine Learning (77%) - Statistics for Data Science (73%) - Cryptography (78%) - Data Structures and Algorithms (82%) - Computer Systems Architecture (82%)

2017-09 2019-05
International Baccalaureate (iB) King George V School

39 points overall - HL Maths (7) - HL Physics (7) - HL Computing (5)