Banin Abrar

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Summary

- C, C++, Python, Node.js, Perl, Rust, Verilog; Docker, Kubernetes, Pandas, NumPy, Tensorflow
- Interested in Distributed Systems, Infrastructure, Web Development, Modelling, Optimization

Experience

JANA Solutions *Sept – Dec '18*
Software Development Intern (Model/Infrastructure) *Aurora, ON*

- Optimized software implementation of probabilistic model for distributed gas transmission lines by leveraging Pandas DataFrames and concurrency in NumPy to accelerate matrix operations.
- Redesigned asset schema and hashing in PostgreSQL to improve system throughput by **90.32%**.
- Built CI/CD pipelines and automated the upload, replace, publish and reload process with Travis CI.
- Authored an internal knowledge base scraper to extract relevant data from user-defined queries.

Integrated Device Technology (IDT) *Jan – Apr '18*
Software Engineering Intern (Algorithm) *Waterloo, ON*

- Improved proprietary H.265 compression's load distribution across multiple x86 compute cores by utilizing Intel's AVX instruction set extensions to perform significantly wider memory operations.
- Increased pixel metadata retrieval rate for x86 processors by **75.81%** over the open-source x265 encoder by implementing SIMD functionalities to achieve high-performance loop vectorization.
- Optimized H.264 FPGA's pipeline architecture in Verilog, reducing total negative slack by **30.85%**.
- Wrote automation scripts to improve SSH compatibility in the internal workflow of the company.

Collaborations

UW Management Consulting Club *Feb '19 – Present*
Technical Lead (Web Development) *Waterloo, ON*

- Design lead for a cross-platform responsive website built using React on a Ruby on Rails backend.
- Developing a scalable, microservices-based backend architecture for deployment on GCP using Google Kubernetes Engine.

Projects

GeekCane | *C, C++, GNU Toolchain*

- Led an embedded systems project for designing a smart walking-aid for the vision-impaired.
- Implemented a proximity-based warning system through ultrasonic signal probing in Onion Omega.

HikePal | *Node.js, MongoDB, Passport.js*

- Built a Heroku-hosted RESTful application to serve an interactive collection of geotagged campsites.
- Utilized Passport.js to implement OAuth and MongoDB to achieve lightweight storage.

Education

University of Waterloo *Sept '17 – Apr '22* (expected)
Candidate for Honours Bachelor of Applied Science in Computer Engineering

- President's Scholarship of Distinction for having more than 95% admission average.

Relevant Coursework

Algorithms and Data Structures, Digital Circuits and Systems *(VHDL)*,
Embedded Systems Design *(ARM)*, Object-Oriented Programming, Docker and Kubernetes