Resume - Alexander Leong

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About Me

- Full stack software engineer with programming experience in C/C++, Java, Julia, Python, Typescript languages.
- Engages with stakeholders throughout the Software Development Lifecycle.
- Works with teams globally (predominantly US) delivering software using Agile/Lean principles and Continuous Integration Continuous Delivery.
- Conduct research and development activities to apply the most appropriate methods to solve problems, develop software development processes to increase quality and productivity by adopting tools and technologies whilst adhering to project and organization requirements.
- Presenter at international conferences advocating for better computational and mathematical methods used in scientific applications.

Professional Experience

(December 2015 –) Boeing – Software Engineer

(2023 -) Engineering Test and Technology – Design and develop DO-330 tools for code generation of application programming interfaces to ensure compatibility and seamless integration of different software components and applications.

- Developed scripts to streamline gathering of application performance metrics.
- Developed code generation and validation logic against user defined schemas to enable the tool to support multiple projects.
- Implemented CI/CD changes to ensure reproducible builds and cross platform support for Linux and Windows.
- Write and generate documentation outlining key design decisions for engineering technical teams and end-user documentation for customers.

(2020 – 2022) Boeing Research and Technology - Backend mobile web application development to streamline manufacturing factory level business processes.

- Software architectural design, define technical requirements, participate in peer reviews, documentation, lead mentoring and training activities.
- Backend API design, implementation to enable integration of critical enterprise factory production systems.
- Liaise with key enterprise stakeholders to enable the following tasks:
  - Cloud Foundry / Tanzu cloud and GitLab development platform.
  - Integrate OAuth client Authentication and Authorization solution.
  - SQL Server and object storage integration.
  - Splunk application-level diagnostics and monitoring.
- Configuration management to support application-level testing activities for key stakeholder engagement.
- Web service systems integration using NodeJS (NestJS) / Typescript
- Develop end to end API integration testing framework (using Wiremock)

(2017 – 2020) Boeing Defence Australia Internal Research and Development - Design and development of a scheduling application as part of an effort to reduce aircraft operator workload.

- C API development to enable language interoperability between Java front-end and C++ back-end application.
- Modelling and simulation of scheduling algorithms.
- Peer to peer publish and subscribe mechanism using Protobuf/GRPC.
- Algorithm design and mathematical optimization to score and determine an optimal schedule plan that satisfies human operator defined constraints.

(2015 – 2017) Boeing Defence Australia 737 AEW&C Wedgetail Program
- Full stack software development in C++/Java/Python on RedHat Linux.
- Perform peer reviews, prepare test procs, quality records and relevant documentation.

(March 2014 - December 2015) Suncorp Group - Pricing Process Officer
- Maintained the pricing optimization process for generating optimized pricing outcomes for Suncorp Personal Insurance customers.
- Written shell scripts to automate system administration tasks around source code management.
- Written technical design documents outlining business requirements, implementation, and testing methods.
- Updated existing documentation to reflect changes in business and system processes.

(2013) Suncorp Group – Contractor
- Design, develop and test web dashboard application for system performance and health monitoring using the Ruby Programming Language.
- Extracted system performance and health metrics from software solutions including Splunk, Go continuous integration, Jira via REST web services.
- Implemented expectation maximization machine learning algorithm for detecting long duration system jobs.

Education
(2010 – 2013) Bachelor of Software Engineering – Queensland University of Technology

Personal Projects
- Using Semidefinite Programming and Mixed Integer Programming techniques for path planning in 3d applications.
- Applied deep learning libraries and OpenCV, CUDA and PyTorch for indirect methods towards 3d reconstruction and pose estimation type problems.
- Experiment with compression/denoising algorithms with applications for medical imaging
- Implement optimization methods for sparse data reconstruction.
- Experimented with Unscented Kalman Filtering on the CMU TrajAir dataset.
- Design developed OpenCV blob-based color detection algorithm and image processing subsystem implemented on ARM Linux single board computer for UAV survivor detection.
- Parallelized implementation of the Hidden Markov Models on Nvidia CUDA Hardware.

Conferences and Presentations
Planned
- Presenter Large Scale Semidefinite Programming Applications with CUDA – Pittsburgh, PA (July 2025)

Recent
- Presenter Robot Motion Planning using Mathematical Optimization at JuliaCon – Eindhoven, Netherlands (July 2024)

- Presenter on MRI Compressed Sensing and Denoising at JuliaCon – Cambridge, MA (July 2023)

Past
- Attendee Nvidia Deep Learning Conference Recommender Systems – Online (2020)
- Attendee Nvidia Deep Learning Conference – Sydney Australia (2018)
- Attendee Nvidia GPU Conference – Melbourne Australia (2016)
- Attendee PyCon Conference – Brisbane Australia (2015)

Referees

Provided upon request.