Taylor **Lloyd**

SOFTWARE DEVELOPER · COMPUTER SCIENTIST

Seattle, Washington

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Work Experience

Amazon.com, Robotics - Industrial Internet of Things (IIoT)
Seattle, Washington, USA

SOFTWARE DEVELOPMENT ENGINEER   *May '19 - Present*

- Designed and implemented a DSP and GPU-accelerated image processing pipeline for mobile SoCs.
- Designed and implemented a serverless corporate device management solution using AWS IoT and Lambda.
- Implemented a realtime projected-light augmented reality system for sortation use-cases.
- Mentored teammates and interns through work review and weekly 1-on-1s

Amazon.com, Alexa for Business
Seattle, Washington, USA

SOFTWARE DEVELOPMENT ENGINEER   *May '18 - May '19*

- Designed and implemented Polycom video conferencing integration with Alexa for Business.
- Implemented Full-CD policies for team, including testing requirements and automated deployments.

IBM Canada, Compilers Group / Cloud Innovation Lab
Toronto, Ontario, Canada

CAS STUDENT FELLOW / CO-OP SOFTWARE DEVELOPER   *Dec. '15 - May '16, May '14 - June '15*

- Implemented GPU data transfer for OpenMP 4.5 in the XL compiler.
- Prototyped and shipped novel GPU loop optimizations, speeding GPU execution by 25%.
- Developed a functional programming language (IBM Dash) and compiler for GPU execution. Wrote language specifications, compiler optimizations, and language runtime extensions.
- Implemented automated testing and continuous deployment on projects across the team with GitLab and Jenkins.

Amazon.com, Fulfillment Technologies
Seattle, Washington, USA

SOFTWARE DEVELOPMENT ENGINEER INTERN   *Sept. '13 - Mar. '14, June '15 - Aug. '15*

- Designed, implemented, and supported an Android chat application with Microsoft Lync integration.
- Designed and implemented bandwidth-aware security camera tablet application, monitoring thousands of warehouse cameras.
- Worked with a small (4-6) person team under an Agile continuous delivery process to support and update thousands of Android devices.

Projects

GPUCheck
STATIC GPU PERFORMANCE ANALYSIS

GPUCheck detects GPU performance problems like non-coalescable memory accesses and divergent branches through LLVM analysis. GPUCheck improves benchmark performance up to 25%, and can be integrated into the build process of any GPU executable compiled using LLVM.

VRTerminal
GOOGLE VR TERMINAL EMULATOR

VRTerminal is a VT100-compatible 256-color terminal emulator for Android, written in Java & OpenGL and available on the Google Play Store.

Wedding RFID
TRACKING/GUIDANCE FOR GUESTS

Guests are issued an RFID tag, used at terminals throughout the event. Tags are tied to guests by web API, while touchscreens and RFID sensors allow interaction. The terminals allow sign-in, direct guests to seats, and track engagement.

Education

M.Sc. Computing Science
UNIVERSITY OF ALBERTA

- Specialization in Compiler Optimizations for GPU Computing
- GPA 4.0

B.Sc. Specialization in Computing Science
UNIVERSITY OF ALBERTA

- GPA 3.6

Skills

Programming Languages
Golang, Java, CUDA, C/C++, Python, LaTeX

Platforms & Frameworks
Lambda, AWS IoT, LLVM/Clang, OpenMP, OpenCL, Android

Areas of Interest
Heterogeneous Computing, Mobile Development, Compiler Optimizations

Publications & Presentations

Memory-access-aware Safety and Profitability Analysis for Transformation of Accelerator-bound OpenMP Loops

ACM Transactions on Architecture and Code Optimization - ACO

July '19

Program Analysis and Compiler Transformations for Computational Accelerators

Edmonton, Alberta, Canada

University of Alberta Master's Thesis

May '18

GPUCheck: Detecting CUDA Thread Divergence with Static Analysis

Not Yet Published

March '18

Automated GPU Grid Geometry Selection for OpenMP Kernels

Lyon, France

Workshop on Applications for Multi-Core Architectures - WAMCA

Sept '18

Divergence and Arithmetic Control Form: Analyzing GPU Applications

Markham, Ontario, Canada

16th Compiler-Driven Performance Workshop - CASCON

Nov '17

A Case for Better Integration of Host and Target Compilation When Using OpenCL for FPGAs

Ghent, Belgium

FPGAs for Software Programmers - FSP

Sept '17

GPGPU Offloading with OpenMP 4.5 in the IBM XL Compiler

Markham, Ontario, Canada

15th Compiler-Driven Performance Workshop - CASCON

Nov '16

Modern analytics with the IBM Dash Compiler

Markham, Ontario, Canada

13th Compiler-Driven Performance Workshop - CASCON

Nov '14

Honors & Awards

2018	**Outstanding Thesis Award - Runner-up**, University of Alberta	*Edmonton, AB*
2017	**Queen Elizabeth II Graduate Scholarship - Master's Level**, University of Alberta	*Edmonton, AB*
2013, 2015	**Dean's Honor Roll**, University of Alberta	*Edmonton, AB*
2013	**Undergraduate Student Research Award(USRA)**, NSERC	*Edmonton, AB*
2013	**Amdahl Academic Scholarship in Computing Science**, University of Alberta	*Edmonton, AB*
2011, 2012	**Jason Lang Academic Excellence**, University of Alberta	*Edmonton, AB*
2010	**Academic Excellence**, University of Alberta	*Edmonton, AB*
2009	**First Place - Iverson Computing Science Exam**, University of Alberta	*Edmonton, AB*