

# Nolan Stelter

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## EDUCATION

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### University of Illinois at Urbana-Champaign

B.S. IN COMPUTER SCIENCE AND ANTHROPOLOGY

Courses: Linux Systems Programming, Computer Architecture, Virtual Reality

Urbana-Champaign

May 2019

GPA: 3.7/4.00

## WORK EXPERIENCE

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### Qualcomm

San Diego/Santa Clara, CA

GPU SOFTWARE ENGINEER

June 2019 - Present

- Developed OpenCL extension for accelerating machine learning calculations on mobile Adreno GPUs.
- Worked in C++/Python codebase used to select optimal OpenCL kernels for a given M.L calculation. Expanded selection logic to support 10+ new M.L operations and kernel variations optimized for six Adreno GPU models.
- Expanded Python codebase for pre-compiling OpenCL kernels and managing metadata for selecting optimal OpenCL kernels. Optimized metadata format to allow for removal of 100's of redundant .json files.
- Wrote and maintained framework for running and testing set of 20+ full machine learning models. Optimized speed of test setup and model testing by factor of 4x, while expanding coverage to 100% of api calls.
- Fixed OpenCL kernel issues involving out-of-bounds memory access, precision errors, and performance loss. Profiled kernels to find compiler regressions and slow code segments, increasing speed of kernels by 15% on average.

### Electronic Theatre Controls

Middleton, WI

SOFTWARE ENGINEER INTERN

May 2018 - August 2018

- Worked on C++ Qt application used for controlling LED lighting in theatrical applications. Fixed bugs related to configuring and managing lights, and added features to allow for easier and more robust management of lighting system.
- Expanded user-interface for configuring wireless lighting fixtures within large scale lighting systems. Increased configuration speed by factor of 3x.

### Virtual Education and Research Laboratory

Urbana, IL

RESEARCH SOFTWARE DEVELOPER

Sept 2017 - May 2019

- Developed virtual reality simulations of nuclear reactors for operator training and educational uses.
- Created virtual reality experiences with focus on making them comfortable and perform well with 90fps target on multiple VR platforms such as Oculus Rift, Vive, and Android.

## PROJECTS

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### VR Tank Battle!    Unity, C#

Fall 2017

- Worked with team to design a virtual reality tank game in Unity engine for the Oculus Rift VR headset.
- Utilized room-scale motion tracking with Oculus Touch controllers and the Virtual Reality Toolkit (VRTK) to create fun and immersive virtual reality experience.

### DIY Malloc    C

Spring 2017

- Wrote from-scratch implementations of C library calls malloc, calloc, realloc, and free.
- Implemented heap memory allocation using sbrk C system call and linked list structure for maintaining allocated and free nodes.
- Used techniques like allocation splitting/coalescing to prevent fragmented memory, and management schemes (best fit, first fit) to improve speed and footprint.

## TECHNOLOGIES

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**Languages**    C, C++, Python, OpenCL, Java, C#, Bash scripting, JavaScript, Perl, OCaml, MIPS Assembly

**Tools/Programs**    Git, Jira, Gerrit, GNU/Linux, Android Dev (adb, AOSP), Unity engine, Qt C++