

# Colden Patrick Cullen

GitHub: @ColdenCullen

(518) 281-6125

colden@coldencullen.com

## .experience

### [0] Google: GCE Virtual Networking (Fall 2019 - Current)

- Designed and built on a C library to be used in drivers for Windows, Linux, FreeBSD, Data Plane Development Kit (DPDK), and VMware's ESXi hypervisor to reduce the maintenance overhead of having frequently duplicated code.
- Worked to increase stability in the Windows NDIS driver for Google Compute Engine's Virtual NIC (gVNIC).
- Drastically reduced driver iteration time by implementing gVNIC queue servicers for Linux tun/tap interfaces, allowing developers to run virtual machines locally.

### [1] Amazon Web Services: SDKs & Tools (Spring 2018 - Fall 2019)

- Wrote an MQTT client in C and bound it to Python and Node.js so that the AWS IoT SDKs could share a single implementation, reducing maintenance burden.
- Implemented a streaming decoder for the HTTP/2 protocol in C to be used in the AWS CLI and SDKs for all supported programming languages.
- Built presubmit testing infrastructure for C libraries and their Python, Java, NodeJS, and C++ bindings to ensure long-term code health.

### [2] Amazon Games: Lumberyard (Winter 2015 - Spring 2018)

- Built an extension system to promote modularity and ease of code & asset sharing. This system was used by game teams to add new optional features to the engine, such as PhysX support, EMotionFX animation engine, and Twitch and AWS integrations.
- Renovated Lua scripting integration to simplify binding to C++, resulting in more bindings for designers and gameplay programmers to use. The new binding system and bindings were later re-used by the visual scripting system.
- Rebuilt the engine's messaging system for communicating between components and core systems to reduce call overhead by up to 90%, at the request of the game teams.
- Added support for building the engine and game projects with Clang for Windows, resulting in ~2x better Debug build performance. Submitted 5 patches to LLVM projects to fix Windows-specific bugs as part of the process.
- Built a game project management library to consolidate duplicate systems and provide game teams with a more consistent experience.

### [3] Amazon Games (Intern): Lumberyard (Summer 2014)

- Worked on demo for in-development distributed game server technology
- Prototyped a dynamically driven pose-based animation system

## .education

### [0] Rochester Institute of Technology, BSc in Game Design & Development (December 2014)

### [1] Carnegie Mellon University, National High School Game Academy (Summer 2011)