Lucas Switzer ->

Cornell University '20 | College of Engineering | Computer Science

> Education

Cornell University | GPA 3.4 — ***2016 - Present***

CS 2110: Data Structures and Alogorithms
CS 2800: Discrete Structures
CS 3110: Functional Programming with OCaml
CS 3140: Embedded Systems
CS 4700: Principals of Artifical Intelligence
CS 4620: Introduction to Computer Graphics
CS 6466: Blockchain and Smart Contracts

Penn State University | GPA 4.0 — ***2014 - 2016***

Intro to C++ & Discrete Mathematics

> Skills

Languages

- Java
- C++
- OCaml
- Python
- Go
- Lua

OS

- Linux
- Windows

Non-Technical

- Technical Writing
- Public Speaking

> Experience

Software Engineering Intern (Instagram Infrastructure) | Facebook, Inc. — **Summer 2018**

- Led the development and deployment of infrastructure analysis tooling across Instagram's Apache Cassandra and core Instagram Server fleet of 18,000 machines
- Contributed to the development of pertinent query serving, proxy, rate-limiting, and gateway services touched by millions of user's requests every second
- Designed a more reliable service level agreement framework focused on use case specific query latency, query consistency, service reliability, QPS limiting, and storage demands for Instagram Cassandra's internal clients such as Direct Messaging, Feed, and Stories

Penetration Tester | Assured Information Security — **Summer 2017**

- Evaluated and exploited the attack surface of radio-enabled embedded systems that utilized the ieee802.11 protocol including routers, IoT devices, medical peripherals, and UAVs.
- Authored technical reports regarding research procedures and findings
- Demonstrated vulnerabilites in Linux Kernel modules and services that utlized the mac80211, net80211, and cfg80211 utilities

Software Member | Cornell Cup Robotics — **2017 - Present**

- Created computer vision system for simultaneous localization and mapping of indoor settings using ORB feature detection and stereo depth estimation
- Interfaced with a large sensor network to produce more accurate localization

Software Engineer | RealBotics, Inc. — **2016 - 2017**

- Developed both Debian/Windows client utilizing a C++ Chromium bridge to render HTML/CSS pages into a native window and attach native function callbacks. This created a reusable framework for all of the company's future native UI applications
- Designed and implemented a serialized messaging protocol for robot communication

> Recent Projects

ZKID: Zero Knowledge Identity on Ethereum

Built a service on top of Ethereum to provided secret but verifiable identity in a trustless, distributed, and potentially Byzantine network. By employing zero knowledge cryptographic techniques ZKID is able to offer users selective-anonymity; that is: a user can choosingly share a verifiable personal attribute (i.e age) with an untrusted party without revealing other aspects of their identity.

BigRedCoin: Experimental Bitcoin Clone

Worked with a team of 4 to create our own simple cryptocurrency for our CS 3110 final project. The project included a full node and miner implementation for a proof-of-work consensus scheme. The project included a P2P networking layer, Nakotomto consensus implementation, a LevelDB storage interface, and an custom wallet that employed best-practice password storage.

ThunderBiscuit: Minimalistic Game Engine

Architected and developed a personalized 2D novelty game experience. ThunderBiscuit is a minimalistic game engine optimzied to run on Linux micro-computing devices. Developed primarily with C++ but includes a Lua virtual machine layer for game-logic scripting. ThunderBiscuit is a part of a larger project to streamline the development of personalized micro-arcade machines.

RealBotics: A Web/Robotics Interface

Contracted by RealBotics, Inc. to develop a client program for the RealBotics platform. The platform itself is a multi-branch operation that integrates web, native, and micro-controller/micro-computing devices to create a forum for people to share and interact with various technological creations from anywhere in the world.

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