

Education

Carnegie Mellon Class of 2016 — *B.S. Computer Science* — 3.4/4.0

- Minor in Human-Computer Interaction
- Relevant coursework: Algorithm Design and Analysis, Cloud Computing, Cognitive Robotics, Complexity Theory, Human-Robot Interaction, Interaction Design Overview, Science of the Web

Experience

National Security Agency — *Stokes Scholar*

Holder of TS//SCI clearance with special background investigation and polygraph

Summer
2013

Remote & Deployed Operations

- Developed Windows anti-malware software
 - Used infection markers to enable lightweight, fast, and accurate detection and neutralization of known malware
 - Heuristically analyzed and tagged potential infection markers
- Created an intuitive network traffic visualizer, allowing analysts to more easily notice anomalous behavior

Summer
2014

Data Network Technologies

- Designed and developed CNE operations tool for collection of computer-to-computer communications
- Designed and implemented secure communications protocol

Summer
2015

Trusted Systems

- Designed and implemented a software keyboard for Android devices that operates in the TrustZone secure environment
- Ported IMA (Integrity Measurement Architecture) to Android
 - Partially implemented the Trusted Platform Module (TPM) standard in the TrustZone secure environment
 - Developed a kernel driver to interface with the software TPM
 - Created TrustZone secure application to sign and certify the IMA measurement list
 - Created a system service enabling Android remote attestation

Projects

April 2015

Created **espresso**, a deep learning framework designed to produce maintainable yet highly performant code compatible with **Caffe**.

July 2014

Wrote **Ties**, an Android application that helps people stay in touch.

April 2014

Implemented **computer stereo vision** using semi-global block matching.

Feb 2014

Created **MiniPlay**, a Chrome extension for web music players with over 500 daily users.

Aug 2013

Built a **dynamic threadpool** in modern C++11 to fill the gap in the C++ STL between `std::async` and `std::thread`.

April 2013

Wrote a high-performance Skein-1024 (SHA-3 candidate) **hash cracker** for the **xkcd Alma Mater challenge**.

Sept 2012

Developed **Chroma**, an Android application designed to help colorblind people distinguish between the entire color spectrum.

2010-2012

Led development of **eva**, software for an autonomous submarine, including computer vision, state machines, and control systems.

Languages

C++11
C
Java
Javascript
Python
x86
Rust

Systems

Cryptosystem design
*nix kernel development
Windows development
Parallel code
GPGPU programming

Web

HTML
SASS/CSS
Angular.js
Node.js
Socket.IO
jQuery
MongoDB

Other Skills

Android
Markdown
LaTeX
Git
OpenCV