

# Travis Dean

travis.j.dean@gmail.com  
434-381-0420  
Charlottesville, VA  
travisdean.github.io

## Summary

Strong applications and systems programmer, with a focus on graphics, performance, and interactivity. Extensive experience in C and C++, including GPU utilization and system architecture optimizations. Develops real-time simulation and visualization programs with Unity and C#, compatible with VR.

## Selected Projects

**MEZ** – Musical Environment visualiZer. This creates a real-time, 3D environment filled with objects and shaders that react to the detected music. Parameters are controlled with a Leap Motion for live performances. My design focus is on making complex, but non-chaotic, scenes reacting programmatically to audio, with conscious control for artistic performances. The architecture is focused on separation of concerns, with generic reusable systems for rapid iteration. Noncommercial, written in Unity and C#. Videos on my website.

**Raytracer** – Renders 3D scenes by performing physically correct calculations of visible light paths, allowing for high levels of reflection, translucence, and global illumination. Graphics project, written in C++ and OpenGL.

**Cool Interpreter** – Written for Cool, a small language designed as a subset of Java, this project is divided into parts that do lexical analysis, parsing, semantic checking, and finally interpretation. Language Design project, written in Python for the lexer and parser and OCaml for the checker and interpreter.

**Simple Inode Filesystem** – Implements a virtual filesystem that responds to Linux syscalls, using a simplified inode approach for file metadata. Operating Systems project, written in C.

## Research Experience

**Perception Lab Research Assistant (2013 – 2015):** Applied extensive knowledge of VR hardware and software systems to further Prof. Proffitt's lab work in studying the psychology of perception.

Integrated technology like the Oculus Rift head mounted display, Intersense motion capture system, and other devices (game controllers, sensor arrays for tracking) to create immersive VR experiences.

Design and implementation of virtual worlds in Unity to test psychological constructs such as distance perception and the Proteus effect (users take on characteristics of their avatars).

**Cryptography Lab Research Assistant (2013):** Collaborated with David Evan's group in cryptography at the University of Virginia.

Set up testing framework for a compiler designed to enable the secure computation of arbitrary algorithms, using common testing frameworks like Cmock.

**High School Science Project (2012):** Independent science project exploring algorithm optimizations.

Implemented a complete Genetic Algorithm solver in C++, with testing on the traveling salesman problem. Evaluated the performance of journal published optimizations, such as multi-parent crossover.

## Education and Awards

### University of Virginia

Undergraduate — 2012-2016

B.A. in Computer Science

### Relevant Coursework

*Computer Science:*

CS 4501 - Computer Vision

CS 4501 - Language Design and Implementation

CS 4414 - Operating Systems

### Awards

College Science Scholar

Echols Scholar

Intel Award for Excellence in Computer Science