

Matthew Plant

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Education

B.S. in Computer Science Graduated May of 2017

University of Illinois at Urbana-Champaign

Senior Thesis: Using Gated SSA Form to Determine Function Equivalence

Relevant Classes

ECE 391 Computer Systems Engineering	A	CS 450 Numerical Analysis	B-
CS 498 Algorithms and Models of Computation	B	CS 423 Operating System Designs	B+
CS 426 Compiler Construction	A	CS 526 (grad) Advanced Compiler Construction	A-

Work Experience

Software Engineer — **Prevoty** Dec. 2017 - Present

- Writing and maintain **ANTLR** grammars for various **SQL** implementations
- Writing evaluation engines for SQL expressions in the **Rust** programming language

Software Engineering Intern — **Google Inc.** Summer of 2016

- Wrote **Go** services to automatically test video applications on consumer devices
- Hands on experience with **PS4** and **Xbox One** development kits

Software Engineering Intern — **Google Inc.** Summer of 2015

- Worked on the Census team maintaining a large and integral **C++** code base
- Added new heap tracking features to the Google's core **profiling** tools
- Removed undefined behavior in the code base by making it **ISO C++11 standard compliant**

Software Engineering Intern — **Google Inc.** Summer of 2014

- Wrote a tool based on **Clang** to rename symbols across multiple **C++** files
- Released the tool as **open-source** with the name **Clang-Rename**
- clang.llvm.org/extra/clang-rename.html

Relevant Works

MGF: Matt's Game Framework — crates.io/crates/mgf

- Collision detection and rigid body physics simulation library for the **Rust** programming language.
- Implements many unique dynamic collision detection routines, such as exact moving capsule collisions without the use of approximate GJK.
- Released as a crate and downloadable via Rust's built-in package manager, Cargo.

Article: Writing A Simple Garbage Collector in C — maplant.com/gc.html

- Article I wrote in my spare time to demonstrate how to research and program algorithms that initially seem too obtuse
- Well received, reached the front page of **Hacker News** and published in the magazine **Hacker News Monthly**

FACT — github.com/dataanalysiscosby/FACT

- Programming language designed and implemented from scratch in **C** my freshman year of high school
- By the time it was finished it had a custom recursive descent parser that was compiled into bytecode for my own custom virtual machine

Additional Experience

Compiler Research at UIUC — allvm.org

- Became a member of the LLVM research group, headed by Vikram Adve
- Wrote a senior thesis on using Gated SSA to detect duplicate code blocks
- Implemented On Stack Replacement for **LLVM**'s McJIT for the graduate level class CS 526 Compiler Construction