

# Matthew Plant

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## Education

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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

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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](http://clang.llvm.org/extra/clang-rename.html)

## Relevant Works

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MGF: Matt's Game Framework — [crates.io/crates/mgf](http://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](http://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](http://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

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Compiler Research at UIUC — [allvm.org](http://allvm.org)

- Became a member of the ALLVM 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