

# HENRY CRUTE

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## EDUCATION

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### University of Texas at Austin

*August 2015 - Present*

M.S. in Electrical & Computer Engineering

Academic Focus in Architecture, Computer Systems, and Embedded Systems

### University of California, Santa Cruz

*September 2011 - June 2015*

B.S. in Computer Engineering

Minor in Computer Science

Dean's Undergraduate Research Award: May 2015

Dean's Honors: Fall 2013 - Spring 2014

Member of Tau Beta Pi Engineering Honor Society

Member of Alpha Epsilon Pi Fraternity

## EXPERIENCE

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### UC Santa Cruz

June 2014 - June 2015

*Research Assistant*

*Santa Cruz, CA*

- Managed a typical LAMP stack server for our research project front end and back end.
- Wrote data visualization scripts using matplotlib and matlab for big data.
- Fixed MSP430 firmware for high speed sampling of voltage and current and storage into the server directly using a wifi network.
- Supported server migration to Django web framework with a PostgreSQL database for incoming data, and a default SQLite database for user configuration.
- Added full support for server deployment using Puppet.
- Wrote custom firmware for the ESP8266-03 to store and POST wattage data to a test server. The firmware includes the use of an ad hoc network to configure the chip to connect to local wifi signals, as well as the server end point.

### CITRIS/ITI

June 2014 - January 2015

*Technical Assistant*

*Santa Cruz, CA*

- Served in technical support for equipment in CITRIS conference rooms, experimental classrooms and videoconferencing facilities, for all their audio-visual and teleconferencing equipment.
- Helped manage conferences, research symposiums, classes, job fairs, and more events requesting CITRIS space.

### iD Tech Camps

Summer 2012 - 2013

*Instructor*

*Irvine, CA and Los Angeles, CA*

- Taught an introduction to programming in Java using Eclipse to kids ages 13 to 17.
- Taught a LEGO Robot Mindstorms curriculum to kids ages 8 to 12.
- Includes interaction between programming, the physical world, and problem solving.

## TECHNICAL STRENGTHS

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### Computer Languages

C/C++, Embedded C, Python, General Assembly, Java, Matlab, Bash, Verilog, Perl

### Communication & Networking Tools & Platforms

TCP & UDP IPs, PAM-N & QAM-N Transceiver Design  
Git, Mercurial, gem5, SPEC CPU 2006, Code Composer, Eclipse, MPLAB, NP++, Geany, FDATool

## ADDITIONAL EXAMPLE PROJECTS

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**SRRIP Replacement Policy** - Built using C++ and Python. Added the Static Re-Reference Interval Prediction policy in C++ to gem5 and compared it to the already implemented LRU policy. Statistics of cache misses for different associativity and sizes were obtained using python and SPEC CPU 2006 test benches.

**Array Multiplier Variants** - Built using Verilog. Analyzed the differences in complexity and delay between having regular ripple carry adders and carry select adders for columns and rows. Used Quartus II to synthesize and obtain timing results, and Modelsim to verify the different designs.

**Compiler** - Built using C++, Flex, and Bison. The compiler scans, parses, type checks, and outputs appropriately translated assembly code. The language is a subset of C, and includes structs, loops, variables, if statements, scope, functions, and more.

**Foobar Challenges** - Built using python. Documented and solved numerous coding challenges in the topics of algorithms, data structures, low-level representation, math, and cryptography.