

Curriculum Vitae — Computer Science
Ian Glen Neal
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Education

The University of Texas at Austin **May 2018**
B.S. in Computer Science
B.S. in Electrical Engineering, Minor in Biblical Hebrew
GPA: 3.7194

Undergraduate Honors Thesis

The Advantages of a Transactional Interface: Porting Applications to TxFS **May 2017**
Committee: Dr. Emmett Witchel (Advisor), Dr. Vijay Chidambaram, Dr. Robert van de Geijn
Evaluated transactional file systems by showing how they benefit existing applications while not adding additional complexity to their codebase. Modified OpenLDAP and SQLite to take advantage of TxFS, a transaction file system developed at the University of Texas at Austin, and discussed the advantages and disadvantages of these ported versions versus their standard implementations.

Research Interests

- Operating Systems
- Computer Architecture
- Security and Secure Systems
- Storage Systems and Technologies
- Virtualization

Publications

Yige Hu, Zhiting Zhu, **Ian Neal**, Youngjin Kwon, Tianyu Cheng, Vijay Chidambaram, and Emmett Witchel. "TxFS: Aggressive Optimizations Using File System Transactions." 16th USENIX Conference on File and Storage Technologies (FaST '18). Currently under review.

Research Projects

TxFS: Transactional File System Project **September 2016 — September 2017**

- File system research project under **Dr. Emmett Witchel** and **Dr. Vijay Chidambaram**
- Evaluated the TxFS system in terms of both programming complexity and performance
- Ported OpenLDAP and SQLite to use the TxFS transactional interface as benchmarks
- Investigated and helped explain reasons for performance benefits and losses

Biometric Monitor **August 2016 — May 2017**

- Honors Senior Research and Design project for Electrical Engineering, supervised by **Dr. Seth Bank**
- Researched low-cost and portable methods for measuring an individual's body fat percentage and hydration level for athletic pursuits and medical monitoring
- Evaluated several sensor systems and microcontrollers for their accuracy and ease of use
- Developed a prototype device that was able to take both hydration and body fat measurements using Pulsed Photothermal Radiometry and Bioelectrical Impedance Analysis, respectively

Teaching Experience

Scientific Inquiry Across Disciplines (formerly Research Methods) **Every Fall, 2014 — 2017**

- Guided students as they came up with inquiries and potential experiments to perform
- Advised students on how to design experiments and perform statistical analyses on collected data
- Aided and supervised students in a biology lab while students performed experiments

Industry Experience

Software Engineering Intern, Microsoft **Summer 2017**

- Designed C# web client library and PowerShell Cmdlet for Exchange data acquisition
- Improved existing REST service by adding features and eliminating defects

Software Engineering Intern, Google **Summer 2016**

- Designed new modular optimization for Flume C++ backend to remove redundant operations
- Implemented optimization tasks that could be run at any time and still maintain graph invariants

Software Engineering Intern, Tableau Software **Summer 2015**

- Created Puppet manifests to deploy product code and support software
- Created extensive validation tests and automated current infrastructure

Software Engineering Intern, Tableau Software **Summer 2014**

- Created ETL scripts to recover and transform product usage data for internal analysis
- Repaired and maintained existing data set for use by marketing and quality assurance teams

Course Projects

Microcontroller Autoloader (C, Thumb-2 Assembly) **Graduate Advanced Operating Systems**

- Designed Linux device driver to serially communicate with an ARM Cortex M microcontroller
- Created an autoloader on the microcontroller that accepted ARM-compiled code from the Linux driver which it flashed into its own EEPROM

Processor Design (Verilog) **Advanced Computer Architecture**

- Designed pipeline and out-of-order issue processors in Verilog using Tomasulo's algorithm
- Optimized processor designs using forwarding, caching, and branch prediction

GheithOS (C++, C, x86 Assembly) **Principles of Computer Systems: Honors**

- Designed a simple operating system and shell by implementing common kernel abstractions
- Built a memory management system, file system, threads, and executable loading abilities

Honors and Awards

Dusty and Doris Duesterhoeft Endowed Presidential Scholarship **2017**

Leola W. and Charles H. Hugg Trust Scholarship **2013 — 2016**

College of Natural Sciences Book Award for Academic Excellence **2016**

Boyce Family Scholarship **2016**

Carl R. Trull Endowed Presidential Scholarship **2015**

Edward Morgan and Rebecca Brown Case Endowed Presidential Scholarship **2014**