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**

Honors Thesis   **May 2017**

> **The Advantages of a Transactional Interface: Porting Applications to TxFS**
> **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.

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

Selected 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

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