

Conrad Bailey

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Education

University of Notre Dame **Major:** Computer Science **Graduation Date:** May, 2018 **Major GPA:** 3.39
Honors: One of twelve selected to participate in Notre Dame's first offering of the Silicon Valley Semester program

Experience

C++/Python Development Intern *Kyndi Inc. – Palo Alto, CA* Jan 2017 – Aug 2017

- Designed and developed a Prolog linear algebra library implemented in C++
- Designed and developed system for extracting lazy evaluation and compile time optimizations for interpreted code
- Conducted large research project exploring existing linear algebra tools and their applicability to Kyndi's needs

Undergraduate Research *Cooperative Computing Lab – Univ. of Notre Dame* Aug 2016 – Dec. 2016

- Designed and developed a new batch processing extension leveraging the AWS Lambda server-less architecture
- Worked closely with Dr. Thain and his team to test and integrate this extension into their code base
- Performed mutual code reviews with another undergrad researcher

Projects

sAnIc *April – June 2018*

- An entry in the **OpenAI Retro Contest** where AI strategies are tested on old *Sonic the Hedgehog* levels.
- I implemented several AI strategies using the OpenAI Gym framework in Python and created profiling tools for automatic comparison visualizations.
- As team leader I built custom deployment tooling, developed methods for testing on distributed GPU/Multi-Core systems, and wrote extensive documentation that allowed my teammates to contribute with ease.

Class-Swap *December 2017*

- A web app where students list classes that they want but are filled, and classes they dislike but got stuck in. The service then matches students with mutually beneficial lists and allows them to swap classes
- Matches students to classes using the Gale-Shapley algorithm for solving stable marriage problems
- I developed the C++ back-end and integrated it with a partner's front-end

XBee Messenger *Mar. – May 2016*

- An IRC inspired messaging service written in C++ and based on wireless serial communication between a combination of Raspberry Pis, Arduinos, and XBee Arduino Shields.
- I was responsible for all back-end development:
 - Implementing that architecture using Boost::Asio utilities to stream and buffer raw data from serial ports
 - Multi-threaded design (pthreads) allowing data reception, broadcast, and input to occur simultaneously
 - Build processes for preparing client and server machines – serial port permissions, connectivity checks, etc.

Tempo *Oct. 2015*

- A workout playlist generation app for Android. Using a heart-rate monitoring device with a Bluetooth connection to your phone, Tempo will pull songs from your Spotify library with BPM metrics corresponding to shifts in your workout intensity.
- I was responsible for all Bluetooth functionality:
 - Asynchronously polling for heart-rate data, device discovery and connection, fault tolerance, etc.
- Winner of the OIT CIO Innovation Award at the 2015 AT&T Mobile App Hackathon – Univ. of Notre Dame.

Misc

- **CRUX Ports:** software packages, mainly high-performance computing tools, that I maintain for CRUX Linux
- **Org-Site:** a custom static website generator in Python based on Emacs Org files and Mustache templates
- **My Blog:** I have little project docs there like how I **built my website** and how I used a **RaspberryPi and OpenCV** to get SMS text alerts when my heated slippers are done charging!

Courses – Compilers Operating Systems Computer Architecture Natural Language Processing
Security Networking Theory of Computing Information Theory

Technologies – C C++(11) Python Git Linux and CLI Shell Docker SQL Make