MICHAEL A. KNYSZEK

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EDUCATION

University of California - Berkeley — College of Letters & Science | Class of 2017
Computer Science Major — { GPA 3.76 }

- Web Development Chair of Upsilon Pi Epsilon Nu Chapter, the **CS Honor Society**
- Coursework: **Operating Systems**, **Virtual Machines** *(in progress)*, Algorithms, Compilers *(in progress)*

WORK EXPERIENCE

ASPIRE Laboratory, UC Berkeley

2014-Current **Undergraduate Researcher**

- Ultimate goal: ***OpenJDK HotSpot RISC-V Port*** *(HotSpot = open-source Java Virtual Machine)*
- Ported **libffi**, a HotSpot dependency, to RISC-V Hardware Architecture (**C** and **RISC-V assembler**)
- Utilized **Yocto** to bring up HotSpot with "zero-assembler" backend on RISC-V Linux
  - Runs real-world Java/Scala apps, like *Apache Zookeeper* and the chip generator *Chisel*
- Currently porting HotSpot's C2 "Server" Optimizing Just-In-Time compiler to RISC-V

Princeton Plasma Physics Laboratory

Summer 2015 **Dept. of Energy Summer Undergrad. Lab. Intern**

- Designed software architecture for creating **visualizations of big 3D data sets** (~200 GB)
  - Built in **Python** using numpy, multiprocessing, CUDA
- Created a real-time rendered 3D n-body simulation for the GPU using **OpenGL** and **CUDA C**
- Simulation uses efficient gridding techniques, including a **parallel key-value radix sort**

Summer 2014 **Graphics Programmer**

- Built a **software system** for cluster sensor monitoring with email/text alerts, written in **C**, **Python**, **JS**
- Created demonstrations o**f CUDA** programming**,** including a Navier-Stokes fluid simulation
- Developed a Python-based GUI for cluster batch job submission and monitoring

2012-2013 **Science Education Internship**

- Developed a **large dataset** visualization solution in **Java (Invention Disclosure)**
- Created a **plotting API for Python** to plot graphs to ElVis visualization software instances
- Helped produce a web-based bracket system for the NJ Science Bowl **(Invention Disclosure)**

PROJECTS

{ Many more @ https://github.com/**mknyszek }**

Curnel: A Python-to-CUDA-C Compiler

- Implemented a Python **compiler** in Python to generate C code that can run on the GPU for a **massive speedup**

NPTSP Solver: Solving a Variant of the Travelling Salesman Problem

- Realized an **ant colony optimization algorithm** in **C** for algorithms class competition - team **placed top 10%**

KV Store: A Distributed Key-Value Store

- Implemented in **C** as a team operating systems class project - features transactions through **two-phase commit**

SporkList: A Playlist for Food

- Created as a Parse/Angular.js web-app in a team for LA Hacks 2015, allows users to make playlists of restaurants!

LANGUAGES & TECHNOLOGIES

7+ Years Programming Experience

Language Proficiency { **C** | **Python** | **Java** | **C++** | Javascript | Haxe | MATLAB | shell | PHP | Racket | **Polish** }
Technological Proficiency { **GNU/Linux** | **Git** | **SVN** | **CUDA** | OpenMP | pthreads | **Yocto** | jQuery | Angular.js }
Strong Debugging Skills { **gdb** | **jdb** | **pdb** | **Assembler** | valgrind | gprof | objdump }

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