Seif **Ibrahim**

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"A motivated computer science student and ViM nerd with 5+ years of experience who is obsessed with high-performance code/algorithms and enjoys building personal projects and hacks in C/C++ and Python. I am looking to utilize and develop my skills at a Computer Science internship."

Experience

Lawrence Livermore National Laboratory (HEDP) — *Livermore, CA, US*

Computational Student Intern — *June 2019 - September 2019*

- Wrote Python, HTML/Javascript/CSS, and C++ code to integrate Jupyter Notebook with the **Ascent visualization infrastructure** allowing interactive in-situ visualization/analysis of large scale physics simulations running in parallel on supercomputers
- First author on a short paper published in the **ISAV 2019** workshop held at The International Conference on High Performance Computing
- Developed a domain-specific "expressions" language for Ascent to facilitate in-situ adaptive analysis by using Flex and Bison to generate a lexer and parser then generating an Abstract Syntax Tree using C++ and finally creating a task graph to be executed in parallel by Ascent
- Implemented several statistical analysis functions in the expressions language leveraging parallelism via OpenMP and MPI
- Presented and documented my work in formal documentation pages, example Jupyter Notebooks, a Scientific Poster, and a slideshow presentation

Education and Training

University of California, Santa Barbara — *Santa Barbara, California*

Computer Science BS, College of Creative Studies (CCS) — *2018-2022*

- **GPA: 4.00**
- **Relevant Coursework:** Algorithms and Data Structures, Operating Systems, Parallel Scientific Computing, Computer Communication Networks, Computer Programming and Organization, Formal Languages and Automata, Human Computer Interaction, Mathematics of Computer Science (Discrete Math, Probability & Statistics), Linear Algebra, Differential Equations, Multivariable Calculus, Physics (mechanics, thermodynamics, electricity).

Skills

Programming Languages	C/C++, Java, Python, Django, Node.js, Express, HTML/CSS, Javascript, Bootstrap, LaTeX, SQL
	Solved hundreds of algorithm and security problems on PicoCTF, Project Euler, USACO, Codeforces, Google Foobar, etc.
Software	Git, ViM, Make, GDB, Linux Command Line, Eclipse, Jupyter Notebook, Microsoft Office, Adobe Suite

Projects

Linux Fake Webcam	Wrote a hacky program in C allowing users to impersonate anybody on webcam chat. The program inputs any video file and a corresponding JSON file of timestamps. The GUI allows users to smoothly and convincingly control the actions of a virtual person or thing on their webcam. I achieved this by writing a Linux Kernel Module (using V4l2 API) and a corresponding application (using Libav) to pipe video into a webcam device.
Masterlock Solver Robot	Built a robot which is able to unlock any master combination lock in seconds and output its combination. I designed a custom breadboard circuit, wrote Arduino code, 3D printed a frame, and assembled together with motors.
Neuroevolution Game Bot	Developed an AI player in Javascript written from scratch based on a paper on neuroevolution of augmenting topologies. The algorithm quickly generates a minimal network capable of navigating the obstacles of a platformer game similar to Mario.
LISP interpreter in SNAP	Designed an interpreter for LISP in SNAP (a visual programming language) in an attempt to loophole the requirement of using a visual language for in-class projects by using the LISP written language instead.

Honors & Awards

2016-18	**USA Computing Olympiad (USACO)**, Platinum Division in Algorithms and Data Competition (top 5% nationally)	*USA*
2017-18	**1st Place Award PiE Robotics Competition at UC Berkeley**, First Place Award and Software/Sensors Award out of 30+ schools. As president of Robotics Club, I trained a team in hardware and software, and led them to victory in competition. I gained skills in wiring and programming Arduinos, Beaglebones, and reading hardware specs.	*California, USA*
2017-18	**Moody Mega Math Modeling Challenge**, Data Modeling Paper Award and $1000 Scholarship (top 8% nationally)	*USA*
2016-17	**Bay Area Mathletes**, Undefeated Math Team in competition with all East Bay Area high schools	*California, USA*