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github.com/aburford | in linkedin.com/in/andrew-burford

Education

Stony Brook University

B.S. IN COMPUTER SCIENCE | GPA: 4.0 B.S. IN APPLIED MATHEMATICS AND STATISTICS | GPA: 4.0 M.S. IN COMPUTER SCIENCE | GPA: 4.0 (In Progress)

Skills

Programming	Experience	Systems	Experience	Libraries	Experience
Python	3.5 yrs	Linux	3.5 yrs	Matplotlib	1 yr
Java	2 yrs	Bash	3.5 yrs	NumPy	8 mos
C/C++	1.5 yrs	Git	3.5 yrs	Rails	6 mos
Javascript	10 mos	Elasticsearch	4 mos	Phaser	6 mos
Ruby	6 mos	MIPS Assembly	4 mos	PyTorch	4 mos
R	4 mos	MongoDB	4 mos	Node.js	4 mos

Experience _____

Stellar Cyber

SECURITY ENGINEER INTERN

- Analyzed statistical models and modified parameters to improve reliability of anomalous data detection
- Utilized penetration testing tools and wrote 60+ Bash scripts to trigger alerts on OpenXDR cybersecurity platform
- Designed and developed automation framework in Python for running scripts in preconfigured environments

Stony Brook University

RESEARCH ASSISTANT | FILE SYSTEMS AND STORAGE LAB

- Assist with incorporating machine learning into Linux kernel for purpose of tuning operating system parameters
- Debug and benchmark multiple machine learning methods applied to optimization of disk cache configuration
- Modify and extend kernel module code and system call hooks inserted into modified Linux kernel
- Build upon Re-Animator LTTng C++ software to parse and statistically analyze system call trace data
- Write user documentation and help co-author manuscript for publication

HIGH PERFORMANCE COMPUTING ENGINEER | COMPUTING CENTER

- Performed software environment maintenance for 200+ packages and libraries in wide range of languages
- Compiled, optimized, and profiled new software across variety of hardware architectures
- Resolved customer service tickets by troubleshooting system issues on high performance computing cluster

Milestone C

SOFTWARE ENGINEER & COURSE DESIGNER

- Designed and developed educational games in Javascript for high school students to learn STEM subjects
- Formulated lesson plans, slideshows, and practice problems for capstone programming course
- Created example Raspberry Pi projects teaching students to create Internet-of-Things devices using Node.js, WebSockets, Redis, Bluetooth, and Python

AdSpaceUSA

SOFTWARE DEVELOPMENT INTERN

- Developed data scraping programs in Python to collate contact information from websites, PDF's, and images
- Designed and implemented data cleaning and interpolation scripts to match and merge 1000+ contact details

Stony Brook, NY

May 2021 - PRESENT

Feb. 2019 - May 2021

Woodbridge, CT

May - Aug. 2020, May - Aug. 2021

West Haven, CT Jun. 2018 - Aug. 2018

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Santa Clara, CA

Stony Brook, NY

Aug. 2018 - Dec. 2021

Aug. 2018 - Dec. 2021

Jan. 2022 - Dec. 2022

Jun. - Aug. 2022

Projects

Space Optimal Suffix Array (SA) Query Algorithm Implementation

GROUP PROJECT | COMPUTATIONAL BIOLOGY

- Wrote standalone C implementation of an SA query algorithm based on Burrows-Wheeler Transform
- Demonstrated superior performance against uncompressed query time in memory constrained environments
- Combined our algorithm with FM-Index to demonstrate use case of locating substring occurences in DNA data
- Communicated findings to professor and class via presentation

Neural Network Verification Research Paper

Individual Project | Hybrid Systems & Trusted Autonomy

- Researched neural network verification techniques e.g. ExactReach, Reluplex, MaxSens
- Extended Neurify verification software to support sigmoid activation function and benchmarked performance
- Communicated findings to professor and class via presentation and research paper

DiemBFT Implementation

GROUP PROJECT | DISTRIBUTED SYSTEMS

- Implemented DiemBFT distributed consensus protocol in Python to create Proof of Concept blockchain
- Integrated Twins testing approach for Byzantine Fault Tolerant systems to prove safety and liveness

U.S. Congressional Redistricting Explorer

GROUP PROJECT | SOFTWARE ENGINEERING

- Developed Python scripts to generate random districting plans using geospatial data and graph algorithms
- Assisted with frontend Javascript to filter and view districtings using Leaflet, Bootstrap, and jQuery
- Designed and helped implement Java backend performing statistical analyses on 10+ GB of districting data

Bluetooth Beacon Attendance System

Senior Capstone Project

- Engineered cryptographically secure solution for students to mark attendance in class via iOS devices
- Wrote Ruby on Rails backend, iOS application in Swift, and Raspberry Pi bash script to create Bluetooth Beacon

Extracurricular Activities_

Stony Brook Running Club

President

Secretary

- Led daily practices and workouts as well as weekly meetings with executive board members
- Communicated club news and information, managed sign up roster for meets, and kept club website up to date
- Fostered welcoming environment by guiding members on new routes and providing training advice

Stony Brook Competitive Programming Club

TEAM COMPETITOR

- Utilize advanced data structures and complex algorithms beyond what is taught in undergraduate classes
- Collaborate with two teammates for weekly 5-hour practice contests and official competitions
- Compete on Stony Brook's top team at Greater New York Regional Programming Contest two years in a row
- Present explanations of solutions and give formal presentations about general programming techniques

Honors & Awards_

2022	Provost's Award for Academic Excellence, Stony Brook University	Stony Brook, NY
2021	3rd out of 55 teams, Greater New York ICPC Regional Programming Contest	Online
2021	4th Individual, NIRCA Cross Country Northeast Regional	Attleboro, MA
2020	1st Place Senior Category, Stony Brook Competitive Programming Contest	Stony Brook, NY
2019	12th out of 65 teams, Greater New York ICPC Regional Programming Contest	Newark, NJ
2018	Eagle Scout, Boy Scout Troop 63	Woodbridge, CT

Jan. 2022 - May 2022

Sep. 2021 - Dec. 2021

Sep. 2021 - Dec. 2021

Jan. 2021 - May 2021

May 2018 - Jun. 2018

website up to date

Stony Brook, NY

Aug. 2020 - May 2021

Aug. 2019 - May 2020

Stony Brook, NY Sep 2019 - PRESENT