John L. Drogo

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Github: https://github.com/droghio

Education

M.S. Johns Hopkins Whiting School of Engineering GPA — **4.0** / 4.0 (with Honors)
Major in Electrical and Computer Engineering Graduated 8/2020

B.S. Rensselaer Polytechnic Institute GPA — **3.97** / 4.0 (Summa Cum Laude)
Dual Major in Computer Systems Engineering & Computer Science Graduated 12/2016

Industry Experience

Google Inc., Software Engineer — June 2020 - Current

Tech Lead & Senior Software engineer in Data Residency team of Google Cloud Security.

Monitoring & Compliance — January 2022 - Current (SWE L5, promoted 11/2022)
Internal Conformance — June 2020 - January 2022 (SWE L4)

- Design, develop, and maintain data processing pipelines to verify and enforce data residency requirements of resources backing Google Cloud. Coordinate execution of small team of engineers to accomplish this goal. Responsibilities include developing massively parallel systems to join multi terabyte data sets to identify anomalies in resource allocations. I work with teams throughout Google Cloud to identify, prevent, and remediate data residency concerns with their systems.

SRC Inc., STELR Engineer — February 2017 - June 2020

A rotation program focused on developing technical leaders in the company. Roles included:

Digital Engineer — May 2019 - June 2020 (Engineer 2A)

- Developed digital signal processing blocks for the receive and transmit paths of an on the move radar. Work included designing and implementing blocks in VHDL, developing models in MATLAB/Python for unit testing, and verifying performance in a laboratory setting.

Systems Engineer — July 2018 - May 2019 (Engineer 1B)

- Designed resource scheduling algorithms for a counter UAS operational area protection system. Developed a Python based simulated environment to visualize and prove algorithms. Analyzed results of tactical system to verify performance and met with customers to design specified engagements.

Software Engineer — February 2017 - July 2018 (Engineer 1A)

- Designed and developed UI, firmware, and software products for a suite of counter UAS technologies. Maintained image for tactical laptop fleet to meet DoD cyber compliance. Used technologies include C++, C#, RHEL, and Windows ADK.

24Shots, Inc., Electrical Engineer — January 2016 - Dec. 2019 (Engineering Contractor)

- Primary engineer for a development of a consumer wireless (BLE) camera follow focus produced by a startup. Responsibilities included establishing requirements, system architecture, and designing control boards and software for both the embedded system and mobile devices. Created dynamic calibration and control algorithm for precise motor control. Took product from initial draft through to shipping several hundred units to end customers.

NebulousLabs, Software Engineer Internship — Summer 2016 (Intern)

- Designed and developed interface panels for a crypto-currency powered decentralized storage application. Principle technologies included React, Redux, and Electron.

SRC, Inc., Software Engineer Internship — Summer 2015 (Intern)

- Designed and developed a modern web based interface for a collection of environmental fate estimation tools. Responsibilities included developing a purpose built SVG chart rendering and template system driven by AngularJS.

Research Experience

Johns Hopkins University, Master's Thesis — January 2020 - August 2020
Advisor: Dr. Dave Clader

- Explored application of quantum algorithms to solving the problem of routing a PCB circuit board. Performed survey of relevant literature and chose a quantum variational approach to support implementation on noisy intermediate scale quantum (NISQ) systems. Following the framework of QAOA developed a mixer operator that encoded the requirements for arbitrary single net-list routing problems. Created a Python framework based on Qiskit to simulate the mixer on a series of 16, 25, and 49 qubit systems and verified the returned routes were complete with higher probabilities given to those that were more optimal. Complied and successfully defended thesis and presented work to research group at APL.

Rensselaer Polytechnic Institute, Smart Energy Research Group — March 2014 - June 2016
Advisor: Dr. Koushik Kar

- Researched efficient HVAC control leveraging distributed IoT sensors and occupant feedback. Responsibilities included developing central server software and networking scheme used to coordinate sensors within the smart energy network. Designed and built custom bluetooth sensors to assist with experimentation. Frequent work with BLE, iOS and macOS's CoreBluetooth Framework, and the TI SensorTag. Culminated in co-author publication accepted in Energy and Buildings.

Syracuse University, Computation Physics Research Group — June 2012 - August 2013
Advisor: Dr. Arindam Chakraborty

- Researched transformation of Hamiltonian for small chemical systems to facilitate efficiency energy calculation. Responsibilities included developing optimization framework to tune the parameters of the transformation and creation of a template system to automate execute of test systems. Culminated in co-author publication accepted in Physical Review A.

Publications

Gupta, S. K., Atkinson, S., O'Boyle, I., **Drogo, J.**, Kar, K., Mishra, S., & Wen, J. T. (2016). BEES: Real-time occupant feedback and environmental learning framework for collaborative thermal management in multi-zone, multi-occupant buildings. Energy and buildings, 125, 142-152. https://doi.org/10.1016/j.enbuild.2016.04.084

Bayne, M. G., **Drogo, J.**, & Chakraborty, A. (2014). Infinite-order diagrammatic summation approach to the explicitly correlated congruent transformed Hamiltonian. Physical Review A - Atomic, Molecular, and Optical Physics, 89(3), [032515]. https://doi.org/10.1103/PhysRevA.89.032515

Teaching Experience

Rensselaer Polytechnic Institute, Electronic Circuits Undergrad TA — Jan. 2016 - Dec. 2016
Advisor: Dr. Shayla Sawyer

Rensselaer Polytechnic Institute, Programming Languages Undergrad TA — Fall 2016
Advisor: Dr. Carlos Varela

Volunteer Experience

CSEdWeek Career Panelist, East Syracuse-Minoa High School — Dec. 2022
Hour of Code Event Host, Virtual Event with NYC Public School Students — Dec. 2021
STEM Career Night Panelist, Pine Grove Middle School — May, 2020, May 2019
Intro to Bluetooth Career Outreach Event, Rensselaer Polytechnic Institute — Sept. 2019

Skills

Digital signal processing (VHDL), FPGA, BLE, PCB design, micro-controllers including the MSP430 and ARM based processors. System modeling via Python, Simulink, and MATLAB.

Web programming including usage of Cordova, React, Redux, Python, SQL, HTML5, JavaScript, and CSS3.

Mobile, computer (Linux, Mac, Windows), and embedded development using C++, C, C#, Objective-C, Java, JavaScript, Python, Bash, Batch, and various assembly dialects.