Zack Nawrocki

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Experience

Spherical Analytics (Context Labs Subsidiary), *Software Engineer* May 2020 - Current

- Played a critical role in securing our series B funding, through leading components of our project deliverables for stakeholders.
- One of the first 15 engineers at the company. By the end of this year, we are projected to have over 80 engineers.
- Founded at MIT, Spherical Analytics integrates blockchain technology with big data ingestion and machine learning, to put trust into data for advanced analytics, investment purposes, and to provide a strategic tool for environmental impact. This startup is a subsidiary of Context Labs.
- My work includes data ingestion, software development, machine learning for the purpose of analytics and processing big data, projects tailored towards stakeholders, and data pipeline architecture management.
- Developed, maintained, and had project ownership over Spherical Analytics' ingestion engine, a system that collects data from specified sources, processes and cleans this data, and then outputs it into the blockchain, data storage locations, and our analytics platform. The ingestion engine stack consists of Python, Airflow, SQL, RabbitMQ, Docker, Kubernetes, Flask, and AWS S3.
- Used XGBoost models to predict free cash flow to the firm for Oil and Gas companies on a quarterly basis.
- Developed algorithms to detect differences in data, at multiple states in the blockchain.
- Developed company and client Python libraries that utilize machine learning to process image data, video data, objects within satellite data, big data, and online data, and then convert into tabular information for ingestion.

National Science Foundation - Lighting Enabled Systems & Applications, *Software Development Research Engineer* Jan. 2019 - May 2020

- Awarded a grant from the National Science Foundation to work on a project for the Lighting Enabled Systems & Applications Engineering Research Center, which is dedicated to developing autonomous intelligent systems, to address modern challenges in the connected environment.
- My project involved the area of autonomous HVAC control for smart buildings, in which I integrated occupant localization, optimized system controls, implemented and evaluated an integrated system for collecting user preferences, and worked on an efficient data-driven learning and MPC smart HVAC personalization algorithm, for cohabited work spaces.

Lockheed Martin - Leidos Cyber, *Software Engineer Intern* May 2018 - Aug. 2018

- Originally the commercial cyber security division of Lockheed Martin, Leidos Cyber was acquired by Capgemini while working here in 2018
- Developed and tested for the Industrial Defender Automation System Manager (ASM) platform, a management platform that aggregates event and state data from industrial endpoints across all vendor systems in one location for a single, unified view of operations.
- Responsible for the development and implementation of a new feature in ASM 7.1, where asset licenses are automatically classified before being configured on the ASM, as well as QA testing of ASM, ASA, agents, network-based intrusion detection systems, and other components of the Industrial Defender ASM Solution.

Skills

Languages: C++, Python, C, Java, Processing, JavaScript, PHP
Fields of Experience: Software Engineering, Data Engineering, Machine Learning, Data Science, Blockchain Technologies, Cybersecurity, Smart Efficient Buildings, Smart Indoor Thermal Management HVAC Algorithms, Privacy, IoT, Academia and Industry Research, Smart Lighting Systems
Other Skills: AWS, Azure, Artificial Intelligence, Project Management, Web Development, Vue.js, MEVN Stack, ROS, MQTT

Selected Projects/Publications

Co-authored Smart HVAC Publication
Achieving Improved Personalization and Energy Efficiency in Cohabited Work-spaces through Data-driven Predictive Control (https://par.nsf.gov/biblio/10186224), published and presented at the American Society of Engineer's Dynamic Systems & Control Conference 2020, studies the problem of indoor zone temperature control in shared work-spaces, equipped with heterogeneous heating and cooling sources, with the goal of increased energy savings and environment personalization.

TroyTutors.com
Founder of Troy Tutors, an online educational platform, which develops collaboration and communication software and offers one-on-one tutoring, live university lectures and recitations, drop-in office hours, discussion forums, job postings for internships and new-grad positions, summer tech talks, and Troy Tutors Tube, an online educational streaming service. I have grown Troy Tutors from just me to a team of over 15 engineers, consisting of tutors, software engineers, interns, and operations managers. I host Saturday computer science lectures, provide one-on-one tutoring, provide mentoring, motivate tutors to join the platform, and help create educational content for Troy Tutors users. I have helped students, who were on the verge of failing out of their university, who are now interning and working at amazing companies, making breakthrough research contributions in their respective fields, and moving on to excellent graduate school programs.

Wyzant Tutor
I firmly believe great tutoring skills are very valuable as a software engineer, as it allows you to explain very complicated and technical situations in simple ways that anyone can understand. This is valuable when working with clients, assisting with onboarding engineers, or advocating for the best solution on a software engineering team. At the time of updating this resume, I have received 286 reviews on Wyzant. Every single review has been 5/5 stars. In my free time, in addition to tutoring on my own tutoring platform and in person, as a volunteer in my local community, I sometimes tutor people, of all ages and education levels, in computer science and mathematics on Wyzant.com. My tutoring profile, bio, ratings, and reviews can all be found at https://www.wyzant.com/Tutors/zachary.

The Smart Conference Room Project
This collection of projects advances many research areas related to smart, efficient buildings, HVAC, IoT, and lighting, as well as breakthroughs related to ToF location-based temperature and lighting occupant satisfaction, pre-heating/pre-cooling energy-saving algorithms, autonomous meeting management, and lowering energy consumption in buildings.

CollabLab
CollabLab is an all-in-one collaboration and communication solution. It allows engineers to write code together in real-time, run it, draw on virtual whiteboards, hold one-on-one and group video calls, host live webinars, chat, and screen share. An all-in-one solution for all of these tasks does not exist anywhere else. It offers laptop and tablet support and is compatible with the Apple Pencil and other common styluses. You can transmit drawings directly from your smartphone, if you do not have a tablet. You can try it out at https://collablab.dev/demo.

You University - Version Alpha
Originally, You University (YUvA) was a computer science university I built, with custom curriculums, for people who were either looking for a career change or could not afford a university program. YUvA included working with students one-on-one and being their professor throughout the entire university program. Today, this has evolved into a long-term side project, in which I am slowly developing a free computer science university, consisting of lecture videos to watch and projects and assignments to work on, which automatically grade with an AI-autograder. This is a project that I am very passionate about and strongly believe will have a great impact on many people's lives.

Education

Rensselaer Polytechnic Institute (RPI) 2016 - 2020
Bachelor of Science in Computer Science, Concentrations: AI and Data, Systems and Software
Rensselaer Medal Award: the Medal, since 1916, recognizes superlative academic achievements and motivates students toward careers in science, engineering, and technology, guaranteeing $30,000 per year in scholarships.
Other Awards: RPI Class of 2020 Honors Convocation Recipient, RPI Dean's Honor List
Clubs: RPI Computer Science Club, Alpha Sigma Phi (Head of Philanthropy/Webmaster/Academic Advisor/Alumni Relations)

Conferences

Presenter at Dynamic Systems and Control Conference 2020, *American Society of Mechanical Engineers* Oct. 2020
Selected by the American Society of Mechanical Engineers to present a co-authored publication at DSCC 2020.

Speaker at "How do we get to SMART Cities?" Conference, *Rensselaer Polytechnic Institute* Apr. 2020
Conference speaker, participated in presentations, poster sessions, and demos related to HVAC and IoT discoveries (the event was initially postponed due to COVID-19)

Presenter at Beyond Illumination: IoT, AI, Machine Learning, and Autonomous Systems that Think Conference, *The LESA Center* Apr. 2019
Presented and ran a demo of research breakthroughs, for members and attendees at LESA's 2019 Industry-Academia Days Conference.

Other Links

Live Availability, *https://doodle.com/mm/zacharynawrocki/availability*
This calendar shows in real time my current availability to talk over the phone, meet, and/or schedule an interview. It syncs with a calendar, which aggregates my work schedule, personal commitments, and project commitments, to list when I am free.

Additional Places to Contact Me, *https://zacknawrocki.github.io/blog/Contact/*
In addition to my personal email and LinkedIn above, this webpage lists my personal, professional, and project contact info, including email addresses and links to directly message me.

Google Scholar, *https://scholar.google.com/citations?hl=en&user=QrTLJJ8AAAAJ*
I greatly enjoy reading the latest computer science and mathematics papers on Google Scholar every morning. This is my Google Scholar profile, which lists my research interests, my academic contributions, and the brilliant research colleagues (as well as great friends) I have had the privilege of working with during my undergraduate studies at Rensselaer.

Relevant Coursework

Randomized Algorithms for Machine Learning and Optimization, Machine Learning from Data, Programming Languages, Operating Systems, Introduction to Artificial Intelligence, Open Source Software, Software Design and Documentation, Network Programming, Principles of Software, Introduction to Algorithms, Computer Organization, Foundations of Computer Science, Data Structures, Computer Science I, Differential Equations, Multivariable Calculus and Matrix Algebra, Calculus II, and Calculus I