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Work Experience

Argo AI (C++) Pittsburgh, PA
Software Engineer *Jul 2022 – Oct 2022*

- Worked on complementary perception stack (CAVS) which provided emergency braking capabilities to the AV
- Enabled the use of high resolution lidar data on limited compute by reducing perception algorithm runtime by >40%
- Improved redundancy throughout the CAVS system, making safety critical signals less susceptible to data corruption
- Led software development for end-to-end testing suite which would allow the CAVS system to be enabled in fleet
- Helped develop new visualization framework which reduced overhead time to review logs from 15 min to <1 min

Neocis Inc (C++) Miami, FL
Software Engineering Intern *May 2021 – Aug 2021*

- Developed algorithm to automatically transfer pre-planned surgeries onto pre-op CT scans
- Developed algorithm to detect and classify splints in CT scans
- Developed novel haptics to facilitate more accurate drilling at steep angles and in hard to reach places

Draper Laboratories (Python, C++) Cambridge, MA
Engineering Intern *Jun 2020 – Aug 2020*

- Developed and implemented a search algorithm using a particle filter and information-theoretic search heuristics
- Applied search algorithm to locate and classify radioactive and gaseous hazards using a mobile sensor
- Implemented improved simulations for gaseous plumes

NYS DOH/Health Research Institute (Python, SQL, JavaScript) Albany, NY
Software Developer Intern *Jul 2018 – Jun 2020*

- Migrated an application storing the location of COVID-19 test samples from an Oracle back end to SQL Server
- Created systems to import patient identifying information as CSVs which drastically reduced data entry times
- Developed Python scripts to pre-process laboratory instrument data and perform automated regression testing

Education

Brown University Providence, RI
Applied Math–Computer Science · GPA: 4.0 *2018 – 2022*

- **Technical Coursework:** Operating Systems · Sublinear Algorithms for Big Data · Advanced 3D Perception · Dynamical Systems · Distributed Systems · Convex Optimization · Information Theory · Computer Networks
- **Teaching Assistant:** Discrete Math (Spring 2020, Spring 2021, Spring 2022)

Projects

Fetch (*Spring 2022*) – Developed perception, planning, and control pipelines on a Boston Dynamics Spot robot to perform object search and retrieval (video)

TCP/IP (*Spring 2022*) – Implemented a TCP/IP stack in Rust

Path Tracer (*Fall 2021*) – Built path tracer and 3D physics engine in C++ and rendered a video of a galton board

OS Kernel (*Spring 2021*) – Built a kernel in C with a scheduler, TTY, S5FS file system, and virtual memory

Ball Balancing (*Spring 2021*) – Built a simulation of a table with two axis of rotation balancing a ball. Implemented a physics engine, simulated raytraced camera, image processing pipeline, Kalman filter, and PID controller (video)

Rocket Stabilization (*Spring 2019*) – Studied bifurcations in the dynamics of a TVC rocket as control parameters varied

Skills

Programming Languages – C++, C, Python, JavaScript, Go, SQL, MATLAB

Tools – Eigen, VTK/ITK, Numpy, Matplotlib, ROS, Oracle, PyTorch, protobuf, zmq

Algorithms – Particle Filters, Kalman Filters, Mophological Operations, 3D Registration, Mask R-CNN, Random Forests

Activities

Juggling, running, rock climbing, cooking, blues dancing, unicycling, bicycling, playing piano