Nathan Lam

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Software Engineer with experience developing custom GUIs, image processing tools, and computer vision solutions

EDUCATION

UNIVERSITY OF HAWAII AT MANOA FALL 2014 - SPRING 2018
B.S. Computer Engineering GPA: 3.87 / 4.00
PROGRAMMING: Python • C++ • C • HTML • CSS • JavaScript • Java
TOOLS & LIBRARIES: OpenCV • PyQt • PyQtGraph • gRPC • Git • Vim • Cygwin

EXPERIENCE

SPECTRUM PHOTONICS | Software Engineer
Python, OpenCV, PyQt, PyQtGraph, gRPC August 2018 - Present

- **Collaborated with QA, Firmware Engineers, and Project Managers to design and develop cross-platform GUIs** to detect chemical and biological plumes using hyperspectral imaging (HSI).
- **Improved image processing and video streaming performance by over 600% (10 FPS to 60+ FPS)** using multiprocessing and threading for both infrared and 3-channel BGR camera feeds.
- **Saved 200+ hours of manual testing** by creating automated unit tests and developing re-configurable GUIs with custom loggers, plotters, and diagnostic tools to alleviate manual debugging across remote machines.
- **Delivered GUI binary executables** for Department of Defense contracts: Compact Configurable Real-Time Infrared HSI System ($1.5M), Hybrid Active/Passive Remote Sensor System ($1.5M), DARPA Invisible Headlights ($300K), and Compact Dual-band Thermal and LWIR HSI Payload for SUAS ($150K).
- **Led design choices for the client-server architecture** of request/response and publish/subscribe information transfer models for multiple projects using gRPC.

BOOZ ALLEN HAMILTON | Software Developer Intern
Python, LIDAR, ZigBee May 2017 - August 2017

- **Led team of six to develop autonomous robotic vehicles** capable of relaying situational awareness and sensory information to surrounding vehicles for collective decision-making.
- **Acquired $195K in additional project funding** after demonstrating high-trust communications and resilience against the injection of malicious inputs by rouge actors; Placed 3rd out of 76 Intern Summer Games teams.
- **Designed a proof-of-concept system based on blockchain technology** to define trust relationships between vehicle-to-vehicle communications.
- **Managed project timeline, scope, and cost constraints** to ensure progress and delivery within a $5K budget.

SPECTRUM PHOTONICS | Software Engineer Intern
Python, Django, Raspberry Pi May 2016 - August 2016

- **Logged 500K lines of daily infrared camera data** by implementing a portable data-logger web-server interface.
- Reduced data processing time by **eliminating manual sorting using automated scripts** to process CSV files.

PROJECTS

SENTIMENT ANALYSIS ALGORITHMIC TRADING BOT Python, Twitter, Slack, Equity Trading
Developed real-time trading bot by applying keyword sentiment analysis on high-profile Twitter accounts with the potential for market moving tweets. Utilized the Twitter API to retrieve real-time queries, processed tweets to obtain a sentiment score based on a positive, negative, or neutral rating then forwarded results to a Slack channel for automated push notifications.

MICROMOUSE C, Object-Oriented Design, Autonomous Embedded Firmware
Designed and built an autonomous self-contained robotic vehicle capable of navigating through a previously unknown maze with the shortest path and time using Depth-First Search and Floodfill solving algorithms. Implemented adaptive intelligence through positional velocity controllers for smooth exploration of maze configurations.