Alfred Tran

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EDUCATION

California Polytechnic State University, San Luis Obispo **Expected Graduation: Dec 2024**
Bachelor of Science, Computer Science **GPA: 3.77**
Organizations: Northrop Grumman Collaboration Project, Computer Science and Artificial Intelligence Club, Robotics Club,
  Computer Engineering Society

TECHNICAL SKILLS

- **Programming Languages**: C/C++, Python, Racket, SystemVerilog, RISC-V, 80x86 Assembly, SQL, PHP, Java
- **Software and OS**: Linux, Visual Studio Code, PyCharm, Xilinx Vivado, MATLAB, LTSpice, Microsoft Excel,
- **Hardware**: Jetson Nano, Jetson TX2, Digilent Basys 3, Digital and Analog Multimeters, Oscilloscope, AC & DC Power Supplies

RELEVANT COURSEWORK

- Operating Systems (C/**C++, Linux**)
- Computer Architecture (**RISC-V, SystemVerilog**)
- Algorithms (**Python**)
- Deep Learning (**Python**)

EXPERIENCE

Lead Computer Vision Engineer | Undergraduate Researcher **3/01/2024 – 07/12/2024**
Cal Poly Learning Aligned Employment Program

- Developed software for Quanser's QCar self-driving cars under the supervision of Dr. Siavash Farzan, in collaboration with an interdisciplinary team of CPE and EE students
- Spearheaded computer vision efforts by using YOLOv5 for detection of stop signs and traffic lights
- Augmented dataset using OpenCV methods to overlay images against varying backgrounds
- Integrated object detection with both Model Predictive Control and Proportional-Integral-Derivative control on the Qcar
- Optimized YOLOV5 inference on Jetson TX2 by leveraging TensorRT

Software Engineer **09/20/2023 – 06/15/2024**
Northrop Grumman Collaboration Project

- Collaborated within a software team in partnership with Northrop Grumman and Cal Poly Pomona to develop computer vision software for two custom UAVs.
- Implemented computer vision to detect objects at up to 190 ft
- Calculated real-world coordinates of detected objects
- Integrated computer vision with autonomous flight using Python's asyncio library
- Researched YOLOv5 implementation and optimization with TensorRT on Jetson Nano
- Utilized OAK D-W camera for running computer vision inference

Student Assistant
Franchise Tax Board | Project Management Office **03/13/2020 – 8/31/2022**

- Maintained the project roadmap for department leadership and completed training in project management processes.
- Managed onboarding for new staff members.

Franchise Tax Board | Disclosure Office **02/5/2018 – 3/13/2020**

- Managed Disclosure Office request inventory and SharePoint site with exceptional attention to detail.
- Utilized excellent customer service skills to respond to requests for tax information.

PROJECTS

Image Manipulation using Parallel Processing and Linear Interpolation with Matrices **June 2023**

- Developed an MPI-controlled program utilizing matrices and interpolation techniques to seamlessly blend two BMP images.
- Significantly enhanced efficiency by distributing the workload across multiple processes, resulting in improved runtimes.
- Analyzed speed-up of using parallel processing versus single core processing.

RISC-V Microprocessor **Jan 2023 – June 2023**

- Engineered a RISC-V microcontroller on a BASYS 3 FPGA using SystemVerilog in Xilinx Vivado, featuring a custom ISA
- Collaborated within a team of 7 Computer Engineering students to optimize the microcontroller with a cache and pipeline.
- Evaluated and optimized microprocessor performance across various RISC-V programs.

Genetic Robot Algorithms **June 2021**

- Developed a C++ program to autonomously explore and map unknown areas using a genetic algorithms search technique.
- The program simulates the evolution of robot populations, employing natural selection principles whereby each subsequent population possesses increased knowledge of the map.