Aravind Kumaraguru

SOFTWARE ENGINEER @ VERKADA

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Software engineer looking for a full-time position with a focus on embedded systems development.

Education

University of Southern California   *Los Angeles, CA*

M.S. IN COMPUTER SCIENCE (GPA: 3.95)   *Aug 2018 - May 2020*

University of California, Berkeley   *Berkeley, CA*

B.S. IN ELECTRICAL ENGINEERING AND COMPUTER SCIENCE (GPA: 3.75)   *Aug 2013 - May 2017*

Experience

Verkada   *San Mateo, CA*

SOFTWARE ENGINEER   *Aug 2020 - Current*

- Developed services for video streaming, video storage management, and system health monitoring on cloud-managed IP cameras.
- Brought up new IP camera platform on a Yocto-based Linux operating system with bindings to SoC vendor's SDK for hardware-accelerated image processing and video encoding.

Robotics Embedded Systems Laboratory   *Los Angeles, CA*

RESEARCH ASSISTANT   *Aug 2018 - Current*

- Collaborated with a team of biologists to autonomously monitor harmful algal blooms in Clearlake, CA with aquatic and aerial robots.
- Developed smoothing and mapping algorithm for BlueQuilt, a framework that can orthomosaic images over open water.
- Designed and built a fleet of ground control points instrumented with an 9 DoF IMU and GPS receiver integrated with a Raspberry Pi.

Cisco Meraki   *San Francisco, CA*

SOFTWARE ENGINEER   *Aug 2017 - Aug 2018*

- Worked as a platforms engineer to bring up Z3C mobile teleworker gateway with integrated LTE and WiFi.
- Tasks included bootloader configuration, implementing hardware-verified secureboot, database migrations, and adding new UI features.

Google   *Mountain View, CA*

SOFTWARE ENGINEERING INTERN   *June 2016 - Aug 2016*

- Worked with the Google Camera team to develop firmware and DSP algorithms for a precise 3D localization system.
- Wrote performance-critical code to process high-speed (~10MHz) data packets in real time on a Beaglebone Black with a PRUDAQ.

Projects

BlueQuilt   *Los Angeles, CA*

USC ROBOTICS EMBEDDED SYSTEMS LABORATORY   *Aug 2019 - Current*

- Developed a framework for orthomosaicing aerial imagery over water, a domain traditional SFM-based image stitching algorithms struggle with.
- Floating April tags instrumented with commodity GPS and IMU sensors are deployed in the water while a drone flies overhead.
- Factor-graph smoothing algorithm jointly estimates the pose of the drone and ground control points from GPS+IMU data of tags and drone.

Publications

Chris Denniston, **Aravind Kumaraguru**, David A. Caron and Gaurav S. Sukhatme. "Incorporating Noise Into Adaptive Sampling". 2020 International Symposium on Experimental Robotics (ISER 2020), Dec 2020.

Chris Denniston*, **Aravind Kumaraguru***, and Gaurav S. Sukhatme. "Comparison of Path Planning Approaches for Harmful Algal Bloom Monitoring." OCEANS 2019 MTS/IEEE SEATTLE. IEEE, 2019.

Skills

Technical Skills	Computer Vision, State Estimation, Linux Kernel Development, Embedded Software, Hardware Bringup
Programming Languages	C, C++, Python, Go
Software/Frameworks	Tensorflow, PyTorch, OpenCV, ROS, Yocto, PostgreSQL, Docker
Licenses	FAA Part 107 Remote Pilot License, Ham Radio Operator (Technician)