RAVYU SIVAKUMARAN

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EDUCATION

Bachelors in Science, Computer Science   — **University of Illinois at Urbana-Champaign**   📅 May 2023 GPA: 4.0/4.0

WORK EXPERIENCE

Undergraduate Research Assistant   — **Autonomous Vehicle Research**   📅 Aug 2021 – May 2022

- Researched autonomous technology under Professor Talebpour to develop a self-driving car for a ride-share service in Rantoul
- Developed SLAM-based motion planning, object detection and control systems in ROS to implement self-driving software into a modified Jeep Cherokee
- Worked with 30 researchers to achieve level-4 autonomy on rural roads through extensive data-collection, simulations, and real-life testing at the Illinois Center for Transportation to realize the safety and ubiquity of self-driving cars on national roads

Software Development Engineer Intern   — **Amazon Web Services**   📅 Jun 2022 – Aug 2022

- Worked in the Redshift data share team which owns the table sharing protocol to provide inter-database, account, and region table sharing in an easy and secure manner
- Revamped encryption key management system for cross-database transactions by developing a key-caching policy framework that would allow host clusters to define access windows
- Wrote tests in pytest to determine suitable key lifespan periods for different cross-database workloads based on usage metrics

Software Design Studio Course Assistant   — **UIUC CS Department**   📅 Jan 2021 – May 2021

- Taught students on programming fundamentals: Object Oriented Programming (Java/C++), black box testing, build automation tools (Cmake)
- Assessed and graded students code on weekly projects, with an emphasis on strong programming practices (modularity, object decomposition, encapsulation, documentation, testing)
- Hosted weekly Code Review sessions to facillitate discussion on programming practices with students

PROJECTS

DSTA TIL 2020   — **Machine Learning + Robotics based Search and Rescue Competition**   📅 Jun 2020

- Trained a YOLOv4 based object detection model on the mnist data set to detect clothes
- Adapted model to a DJI Robomaster to autonomously identify and rescue targets based on clothes worn in a simulated disaster zone
- Finalist in University Category

Self-Hosted cloud server   📅 Ongoing

Converted my desktop to a cloud server for personal use.

- Running full LAMP stack with Nextcloud (Cloud storage), Gitea (Git server), SSH, VNC
- Utilized Linux OS specific tools (network management, bash scripting, systemd, software RAID) to setup the hosting platform
- Working on secure remote WOL (Wake on LAN) solution

Open Source Initiative   — **ACS(I) Robotics Club**   📅 Nov 2016 – Apr 2017

Led an initiative to switch to open source robotics platforms for use in Competitions.

- Conducted workshops on how to read instruction set manuals for Arduino (AVR) and datasheets for sensors/electronics, with an emphasis on appreciation for open source culture
- Taught basic computer architecture concepts (ALUs, registers, IO) to junior members
- Setup and maintained communication channels between the software team, hardware team and part suppliers

LEADERSHIP

President   — **Singapore Students Association**   📅 Mar 2021 – Mar 2022

- Led a committee of six to manage an organization of approximately sixty members
- Spearheaded several initiatives including partnerships with other cultural societies and sponsorships from the Singapore Government for community-wide events
- Planned and executed a several-month long orientation program for newly-matriculated Singaporeans, ending off with a overnight guided trip to Chicago.

Air Warfare Officer   — **Singapore Armed Forces**   📅 Apr 2018 – Apr 2020

- Trained as Air Traffic Control (ATC) Officer; in charge of recovering air assets in the event of national emergencies
- Led ATC operations briefs on a weekly and daily basis and managed communication between various bases during day-to-day operations
- Completed service on April 10th with the rank of Lieutenant

COURSEWORK

Computer Vision   Algorithms and Models of Computation   Machine Learning (PyTorch)   Computer Security

Computer Systems Engineering   Programming Languages   Probability and Statistics