Kavel Rao

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Education

University of Washington Allen School of Computer Science, GPA: 3.96/4.0 **Jun 2024**

- B.S. Computer Science
- Washington NASA Space Grant Scholar: 4 year scholarship

Relevant Coursework: Machine Learning (graduate level), Artificial Intelligence, Database System Internals

Experience

Undergraduate Researcher – xlab @ UW Allen School **Feb 2022 – Present**

- Exploring intersection of explainable AI, natural language processing, and ethics to create socially acceptable AI
- Investigating model reasoning about contextual morality of actions to add nuance to ethical judgments
- Developing method to define model decision boundary and extrapolate adversarial datasets for robust training

Technologies Used: PyTorch, Pandas, Hugging Face, GPT-3, Gensim

Software Engineer, Part-time – Conversica **Jun 2021 – Sep 2022**

- Reduced company spending by $100,000/year building Kubernetes resource auditor with deployment pruning, cutting cluster size by 30%. Original scope was one-time cleanup, but now adopted into MLOps process
- Delivered infrastructure for AI-powered chat based on BRD, scalable to 100 concurrent sessions. Implementation included DynamoDB for context and config storage, REST-based Django API for flow and business logic, Locust load testing, and model inference autoscaling with Sagemaker endpoints
- Integrated and deployed 3rd-party semantic search service by building REST API wrapper for gRPC protocols. Will be used on front page of customer chat services

Technologies Used: Python, Django, AWS, Docker, Kubernetes, GitLab CI, Terraform, Jira

Teaching Assistant – Wireless Communication @ UW Allen School **Mar 2022 – Jun 2022**

- Requested by professor to TA as undergraduate based on sophistication of software defined radio final project
- Worked with students through class time and office hours to ideate, scope, and implement innovative final projects such as multi-channel walkie talkie, radio astronomy

Student Software Engineer – Husky Satellite Lab **Oct 2020 – Dec 2021**

- Programmed embedded satellite systems to enable low earth orbit subsurface scanning radar experiments
- Designed satellite orientation control algorithm to provide directional radar adjustment using microcontroller drivers to interface with positional sensors and motors. Satellite scheduled for launch in late 2024

Technologies Used: C/C++, MSP 430 microcontroller

President & Senior Mentor at Newport High School Rocketry Club **Sep 2016 – Jun 2020**

- Founded school club and obtained recurring corporate sponsorship of $3000 per year
- Led 2 teams to national finals and design presentation first place by using flight data to tune Open Rocket model

Technical Qualifications

Languages (Proficient): Python, Java, C, SQL
Languages (Familiar): C++, Bash, JavaScript, HTML, CSS
Tools: Docker, Kubernetes, Django, Git, Terraform, Linux/UNIX, LaTeX**,** AWS (Sagemaker, DynamoDB, S3, Redshift)

Projects

Mutually – DubHacks Hackathon Project (Links: Code, Devpost, Video) **2021**

- Prototyped a democratic mutual aid platform to contribute to and receive financial aid directly from the community
- Finalist in the Downtown track of DubHacks, hosted at University of Washington

Technologies Used: Python, JavaScript, Django, ReactJS

Captioned FM Radio – Python Application (Links: Code, Writeup) **2020**

- Built a streaming FM radio player using signal processing with machine learning speech–to–text captions

Technologies Used: Python, NumPy, SciPy, PyTorch, Software Defined Radio