Karan Vasudevamurthy

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Education

The University of Texas at Arlington — **Aug 2023 – May 2025**
Master of Science in Computer Science — *Arlington, Texas*

Dayananda Sagar College of Engineering — **Aug 2019 – May 2023**
Bachelor of Engineering in Computer Science and Engineering — *Bangalore, India*

Experience

The University of Texas at Arlington — **Aug 2024 – May 2025**
Graduate Teaching Assistant — Information Security — *Arlington, Texas*

- Modernized lab functionalities and ensured seamless operational continuity by rewriting legacy scripts for a newly rebuilt lab system, creating an updated and efficient learning environment.
- Enhanced student understanding and engagement for **50+ students per semester** in Information Security concepts, including encryption, Linux access management, setuid programs in C, and buffer overflow attacks, improving lab comprehension and practical skill application.
- Elevated students' practical understanding of real-world security threats by orchestrating and hosting Capture The Flag (CTF) competitions and hands-on security exercises, resulting in greater student preparedness for cybersecurity challenges.
- Earned recognition as **one of the best TAs of the semester** through exceptional teaching, dedicated student support, and commitment to enhancing the learning experience, positively impacting students in the cybersecurity lab.

Visteon Corporation — **Sept 2021 – Mar 2022**
Software Engineering Intern — Computer Vision — *Bangalore, India*

- Improved real-time driver assistance system **accuracy by 25%** by optimizing facial landmarking algorithms and reducing noise via MediaPipe filtering, validated using behavior test suites on Mahindra platforms.
- Reduced edge detection **latency by 40%** by shifting processing from cloud to on-device OpenCV inference on Android, enabling frame rates to meet real-time Driver Monitoring System thresholds.
- Contributed to surround view photometric alignment and Alexa integration for Mahindra XUV700, helping it achieve **77% market share** in the mid-size SUV segment, validated through internal UX studies and customer feedback.

Projects

PyWard | *Python, YAML, PyTest, Open-Source Maintenance* — **May 2025 – Current**

- Pioneered and sole maintainer of an open-source Python linter, offering 15 optimization rules (e.g. unused vars, loop inefficiencies, unreachable code) and 9 security checks (e.g. weak hashes, hard-coded secrets, unsafe URL opens, SSL bypass).
- Automated PyPI releases and CI via GitHub Actions with a custom YAML pipeline, reducing manual overhead by 100%.
- Designed modular architecture to simplify rule integration and system design scalability, attracting contributors and enabling rapid feature expansion.

The WAW Podcast | *React, CSS, GSAP, CI/CD* — **Feb 2025 – Mar 2025**

- Designed and developed a fully responsive React site with GSAP animations and custom CSS, dramatically increasing user engagement and discoverability within three weeks.
- Implemented CI/CD pipelines for automated testing and deployment via GitHub Actions, ensuring seamless content updates and high site reliability.
- Integrated Google Analytics to provide podcast hosts with detailed user insights, including visitor counts and session durations.

Sentiment Analysis – Movie Reviews | *Python, TensorFlow, BERT, NLP* — **Aug 2024 – Dec 2024**

- Benchmarked LSTM, Bi-LSTM, and fine-tuned BERT models on 50,000+ IMDB movie reviews.
- Enhanced model performance through pre-trained GloVe embeddings, bidirectional LSTM architecture, increased regularization (dropout, batch norm, L2), and optimized input length, improving stability and generalization.
- Achieved superior results: BERT's accuracy of 93%, surpassing both LSTM (89.15%) and Bi-LSTM (89.65%) baselines.

Fake News Detection | *Python, Transformers, NLP* — **Jan 2023 – Apr 2023**

- Improved false news detection F1 score by 12% over baseline models by **pioneering India's first government-verified news dataset**, created through web scraping the official Press Information Bureau site and leveraging BERT embeddings combined with cosine similarity to assess tweet reliability.
- Developed a Telegram chatbot capable of real-time sentiment analysis, political bias detection, and credibility scoring, demonstrating a practical application of NLP techniques to improve news trustworthiness.

Technical Skills

Languages: Python, Go, JavaScript, TypeScript, SQL, HTML/CSS
Web Technologies: React.js, Vite, Tailwind CSS, GSAP, RESTful APIs, Figma, Postman, Flask, Streamlit
Machine Learning: TensorFlow, OpenCV, MediaPipe, Dlib, LangChain, NLP, Weights & Biases, Computer Vision
DevOps: Docker, GitHub Actions, Git, CI/CD, Linux, AWS
Software Engineering: Agile, Software Development Life Cycle, Test-Driven Development, Microservices, Design Patterns