Abhishek Vishwakarma

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Education

California Sate Polytechnic University, Pomona **Aug 2023 – Present**
M.S in Computer Science: Advanced Algortihms, Connected Autonomous Vehicle, Advanced Computer Architecture

University of Mumbai, Mumbai **Jul 2015 – May 2019**
B.E. in Information Technology: Big Data Analytics,Computer Networks,OS,AI,Image Processing,Data Structures

Technical Skills

Programming Languages: Python, Java, C++, Golang, Shell Script, JavaScript, SQL, Typescript, HTML, CSS
Web Technologies: Tornado, DJango, Flask, ReactJs, NodeJs, Bootstrap, SaaS, RestAPI, FastAPI, AWS, GCP, Azure.
Software & Tools: VsCode, Git, PyCharm, NetBeans, Kubernetes, Docker, Fluent-bit, AWS, GCP, Azure, OpenCV, OpenSSL, Wireshark, Nmap, Metasploit.
ML Frameworks and Python Libraries: PyTorch, Scikit-learn, TensorFlow, Matplotlib, Pandas, Numpy, OpenCV
Embedded Platforms: Nvidia Jetson, Arduino Mega, Raspberry Pi | **OS**: Linux, Windows, MacOS

Experience

Autonomous Vehcile Lab, Cal Poly Pomona – *Lead Reasearch Assistant* **Dec 2023 - Present**

- Developed a TensorFlow deep learning model for extracting steering angles from road lanes with a MSE of 0.002
- Implemented ROS nodes to collect model training data from ROS topics and raw camera feeds.
- Wrote firmware for Arduino Mega to interpret control signals and manage throttle and steering via a stepper driver.
- Led a cross-functional team of software and hardware engineers in developing an autonomous vehicle from scratch.

Protegrity – *Software Engineer* **June 2019 – Aug 2023**

- Developed a product designed to seamlessly integrate with the network protocol stack, ensuring real-time data protection and encryption/decryption capabilities for HTTP, SMTP, SFTP, and S3.
- Developed a Python-based product feature for backend services enabling PDF content extraction with detokenization while minimizing data loss, visibility issues. Achieved a 50% efficiency to facilitate customer needs for onboarding.
- Maintained Continous integrations and continous deployment(CI/CD) pipelines for new feature releases, leveraging technologies such as Kubernetes, Jenkins, Ansible, and Terraform, Docker.
- Demo'd POC transitioning from HTTP to Emissary Ingress/Envoy in MicroK8s achieving 30% better performance.
- Optimized codebase by removing unused code and fixing broken function calls, leading upto 10% code coverage increase.
- Streamlined product code-base upgrade from Python 2.7 to 3.10, adeptly handling bytes/string migration challenges.
- Automated 50+ API tests across 30+ pages using Postman to identify and report frontend integration bugs.
- Offered valuable insights during the migration of the product's security architecture to a microservices infrastructure.
- Employed coding standards, led thorough code reviews, and managed source control, builds, testing, and operations.
- Authored unit tests & increased source code coverage by almost 20% for multiple releases of the product.
- Proactively nurtured junior developer growth through guidance, showcasing leadership and interpersonal skills.

Projects

Lane Change with object detection for Autonomous Vehicle | *OpenCV, Python, C++, ROS2* **Ongoing**

- Led the collection of a diverse road image dataset, meticulously annotating lane markings and obstacles for training.
- Trained and implemented a deep learning model for lane detection using the collected dataset, achieving high accuracy in computer vision tasks.

Fire Detection and Suppression with UAV | *Scitkit Learn, Yolov5, Google Colab, Python* **Ongoing**

- Designed and implemented a machine learning model to enable fire detection and suppression feature for UAVs, achieving precise geological location in real-life situations.

KarmaKart | *React, Javascript, Redux* | GitHub

- Developed a dynamic shopping website using React. Redux for state management enhancing scalability & performance.
- Utilized dummyjson for fetching and displaying product data, demonstrating proficiency in JavaScript, React.

CPPFoodDelivery | *Java, System Design Patterns* | GitHub

- Built a robust Food Delivery App in Java, ensuring efficient and maintainable architecture.
- Utilized system design patterns such as Singleton, Flyweight, Builder, Factory, and Observer.

Publications

A Biometric-Secure Evoting Sytem for Election Processes. | *ICECEIC*

- Published research on an advanced biometric-based authentication secure voting system employing Iris Authentication.
- Actively collaborated in the development and testing of an Arduino Uno-based electronic voting machine.