ANURAG BAMBARDEKAR

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EDUCATION

M.S. Electrical & Computer Engineering – *Rutgers University, New Brunswick, NJ* *Sept 2022 – May 2024*
Relevant Courses: *Software Engineering, Computer Architecture, Machine Learning, Data Structures & Algorithms* **GPA:***3.92/4*

B.E. Electronics & Telecommunication Engineering – *University of Mumbai, India* *Jun 2016 – Oct 2020*
Relevant Courses: *Communication Networks & Systems, Wireless Networks, Microprocessors & Microcontrollers* **GPA:***8.47/10*

SKILLS

Coding Languages: Python3, Javascript, Typescript, Java, C++, C, Shell, CSS, HTML
Databases & Reporting: MySQL, PostgreSQL, MongoDB, Amazon RDS, Tableau
Frameworks: Django, React.js, Flask, Bootstrap, Spring Boot, Express.js, Vue.js, Angular
Tools & Libraries: vim, git, Powershell, Postman, Node.js, Figma, Arduino, LaTeX, AutoCAD, Redux, PyTorch, Docker, Kubernetes, Amazon Web Services (AWS), Azure, RabbitMQ, Selenium, WireShark, GNURadio, GraphQL, ROS, SimpleScalar

EXPERIENCE

Graduate/Teaching Assistant – *Rutgers University, New Brunswick, NJ* *Jan 2023 – Present*
- Driving research at WINLAB to innovate wireless spectrum sharing, addressing Radio Resource Management problems, resulting in the optimization of 5G wireless communication systems.
- Instructed and facilitated lab sessions for 'Digital Logic Design' and 'Computer Architecture', guiding over 220+ students in circuit design, microcontroller programming, and Computer Architecture concepts, resulting in a 99% pass rate.

Technical Advisor – *WINLAB, North Brunswick, NJ* *May 2023 – Aug 2023*
- Mentored 80 interns through 10 diverse projects at WINLAB poised to redefine technological landscapes.
- Optimized data collection process from CARLA simulator, leveraging PostgreSQL, Django REST API, and NAS (Network Attached Storage) facilitating seamless statistical analysis and visualization.
- Enhanced city safety with 98% accuracy in multi-camera car and pedestrian detection using Python sockets and YOLOv8.
- Oversaw a 5G/NextG project, implementing an open-source 5G system within the O-RAN framework, optimizing network efficiency and resilience.
- Deployed Ceph with Ansible and SLURM, stressing 40 GbE switches to prevent ML workload bottlenecks in hedge funds.
- Directed the development of a collaborative AR app for real-time virtual mural creation, utilizing Unity3D, Hololens, and AMQP.

Technical Consultant – *Encora Innovations Labs, India* *Oct 2021 – May 2022*
- Contributed to DHL Express' Perishable Goods Monitoring system, leveraging sensor data for real-time warehouse analysis, achieving a 25% increase in on-time deliveries.
- Conducted exploratory data analysis which resulted in a 60% reduction in data dimensionality.
- Produced actionable reports and visualizations using Plotly, leading to a 30% reduction in spoilage rates.
- Utilized time-series analysis to identify areas for targeted upgrades in the warehouse, increasing system reliability.
- Engineered a scalable and secure Node.js/Express.js backend with a 43% reduction in API response time by using GraphQL.
- Automated microservices deployment via Kubernetes and Selenium achieving 50% resource reduction, speeding up deployment.

PROJECTS

Urgent Care Management System
- Spearheaded API-driven healthcare solution development, streamlining manual processes by 90%.
- Created a comprehensive web application featuring patient registration, automated billing, and doctor availability.
- Architected a MySQL-on-AWS backend with JavaScript, Node.js, and Express, integrating Twilio for real-time SMS alerts.
- Ensured compliance and security via role-based access, password-hashing using Bcrypt and authentication with JWT.

Real Time Analysis of Surveillance Camera
- Deployed an advanced video surveillance, achieving 95% accuracy in detecting objects like weapons and unattended bags.
- Leveraged OpenCV and TensorFlow to achieve 98% facial recognition accuracy, improving real-time CCTV subject profiling.
- Implemented motion detection and object tracking algorithms, achieving 83% accuracy in tracking.
- Published research paper in IRJET, demonstrating advancements in face and object detection for enhanced surveillance security.

Medicine Vending System
- Engineered a RFID-enabled vending machine, powered by Atmega32A, achieving a 92% power reduction for enhanced reliability.
- Effectively interfaced 5 peripherals, maximizing microcontroller port efficiency for optimal performance.
- Designed a Google Cloud-integrated Python-MySQL interface, enhancing medication management for healthcare professionals.
- Achieved Second Prize at the National Level IoT Challenge 2019, underscoring innovation and impact.