# Bhavana Nare

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## EDUCATION

**Master of Computer Science Thesis**
(Aug 2021 – May 2023) University of Georgia, Athens, Georgia **GPA: 3.7/4**
**Bachelor of Technology – Computer Science**
(Oct 2010 – Apr 2014) Sree Vidyanikethan Engineering College, Tirupati, Andhra Pradesh **GPA:7.9/10**

## PROFESSIONAL SUMMARY

- Proficient in Python, C++, and JavaScript, with a strong foundation in database management and cloud services.
- GraphQL and API Development skilled in designing scalable APIs, RESTful services, and GraphQL queries for microservices architecture and real-time data aggregation
- Currently working with cutting-edge technologies including Databricks, Hex, and implementing AI governance practices in MLOps workflows
- Currently working as Cloud Security Analyst implementing automated security patching tools, vulnerability assessment systems, and ML-based threat detection models
- Skilled in deploying robust AI and ML solutions, enhancing system functionalities, and driving operational efficiencies through automated workflows.
- My expertise encompasses designing and implementing scalable software solutions, managing end-to-end software development life cycles, and leading agile project teams.
- **Software Engineer and Full Stack Developer** with over 9 years of experience in **software development**, **system integration**, and **DevOps automation**, specializing in **Python**, **Django**, **Flask**, **React JS**, and **Cloud Technologies** like AWS and Azure.
- Expertise in **Python Libraries** including NumPy, Pandas, scikit-learn, PyTorch, TensorFlow, and Matplotlib for data processing, machine learning, and AI applications.
- Proficient in developing scalable web applications using **Django**, **Flask**, **React JS**, and **Dash**, with backends powered by **PostgreSQL**, **SQLite**,
- Hands-on experience in building **ML pipelines** integrated with AWS SageMaker and **AWS Lambda**, ensuring real-time data processing, deployment, and resource optimization.
- Experience with **computer vision projects**, including camera object detection, 2D-to-3D box mapping, and emergency braking assistance, using OpenCV and custom models.
- Designed and implemented robust **data pipelines** using **Snowflake**, **DynamoDB**, and SQL databases, ensuring scalability and efficient data storage.
- Followed **functional safety standards (ISO 26262)** and **cybersecurity (ISO 21434)**, with experience in ASIL compliance.
- Developed and maintained **automation frameworks**, including tools like csmcli and csmlint, to streamline deployment workflows using YAML configurations and Artifactory.
- Led end-to-end development for **AUTOSIM** and **IMS_DASHBOARD**, integrating cloud APIs, creating visualization tools, and reducing manual effort by up to 70%.
- Proficient in **Linux system administration**, shell scripting, and version control tools like **Git**, **Bitbucket**, and **Confluence** for project management.
- Experienced in building task management dashboards and workflow reporting tools, leveraging **React JS**, **Django**, and **AWS S3** for storage and real-time updates.
- Processed API requests or automates tasks, such as triggering events when new data is uploaded to S3 or handling backend logic for **AUTOSIM** workflows using **AWS** Lambda services
- Published research on a **Computational Trust Framework** at the University of Georgia, implementing machine learning models for dynamic trust scoring in human-robot teams. Computational Trust

**TECHNICAL SKILLS**

- **Programming Languages:** Python, C++, Django, Flask, Java, Unix Shell Scripting, React JS, MySQL
- **Frameworks & Platforms:** PyTorch, TensorFlow, Keras, OpenCV, scikit-learn, Pandas, Numpy, MLFlow, OpenAI Gym
- **Cloud Technologies:** AWS (S3, Lambda, CloudFormation, DynamoDB, SageMaker), Azure Pipelines
- **Automation & DevOps Tools:** Docker, Jenkins, Ansible, Terraform, CI/CD Pipelines, Bitbucket, Artifactory
- **Data Management:** Snowflake, PostgreSQL, SQLite, Oracle, AWS DynamoDB, SQL
- **Visualization Tools:** Plotly, Dash, Matplotlib, Draw.io
- **Testing & Debugging Tools:** SonarQube, PyYaml, Pylint, JSON
- **Software Development Life Cycle (SDLC):** Agile Methodology, V-Model, DevOps Practices
- **Version Control:** Git, GitHub, Bitbucket
- **Operating Systems:** Linux (Ubuntu, RedHat), macOS

**Functional Expertise:**

- **Machine Learning & AI:** ML pipeline development, clustering algorithms, trust modeling in human-robot systems, Bayesian models
- **Software Integration & Validation:** Middleware analysis, system debugging, testbench validation, end-to-end integration
- **Pipeline Automation:** CI/CD pipeline creation, PR automation, dependency management with Conan
- **Full Stack Development:** Flask, Django, Dash, React JS, SQL databases
- **Computer Vision:** Camera object detection, 2D to 3D box mapping, emergency braking assistance systems

**PROFESSIONAL EXPERIENCE**

**Rivian Automotive, LLC** May 2025 – Present

Product Owner for Mechanic Patch Manager- Python MLOps Engineer

**Cybersecurity MOAB:**

- **Technologies***:* Python, GraphQL, Databricks, Hex, SQL, GitLab, VERTEX AI
- **Key Contributions & Responsibilities:**
  - Translate business requirements and technical specs into actionable epics and user stories for Rivian's internal developers, keeping the backlog transparent, prioritized, and tied to customer-impact metrics.
  - Own the roadmap for developer-facing security tooling, sequencing releases, communicating trade-offs, and ensuring platform, security, and ML stakeholders stay aligned on commitments.
  - Lead cross-functional design sessions with engineering teams to tackle complex dependency and security workflows, balancing dev experience, performance, and compliance.
  - Partner with technical delivery leads on release planning, track sprint progress, and provide precise status updates that flag risks early and outline mitigation plans.
  - Ship automation bots (Renovate, Dependabot) as backlog initiatives that harden CI/CD pipelines and deliver measurable improvements to developer productivity and security posture.
  - Define and deliver Databricks workloads, GraphQL data services, and Hex dashboards that forecast high-risk dependencies, giving developers real-time insight into patching priorities.
  - Coordinate ML-driven recommendation features—auto PR tagging, anomaly detection—through incremental user stories, acceptance tests, and production rollouts that accelerate developer response time.
  - Maintain living product documentation (runbooks, dashboards, backlog annotations) so

engineering squads have a single source of truth for functionality, release scope, and process improvements.

- Engage daily with agile teams to clarify requirements, unblock delivery, and drive continuous-improvement feedback loops; escalate when velocity, quality, or developer outcomes are at risk.

**Robert Bosch, Michigan** August 2023 – April 2025

Product Owner – Python Engineer

**System Safety Engineer & Software Integrator CSW (Complete Software)**

- **Technologies***:* DOORS, Python, Shell Script, C++, JSON, Conan, Testbench Hardware, Azure, Django, Docker, Yaml, DynamoDB (No SQL) and ReactJS
- **Key Contributions & Responsibilities:**
  - Developed and optimized robust, scalable systems for applications using Python, Shell Script, and C++.
  - Utilized Azure to design and deploy resilient software components, ensuring high availability and performance.
  - Automated CI/CD pipelines using Azure Pipelines and Git, improving deployment efficiency and reducing manual intervention.
  - Built RESTful APIs using Django for seamless backend interactions and ensured efficient database management with PostgreSQL and DynamoDB.
  - Integrated RESTful APIs with machine learning models for real-time data processing.
  - Implemented end-to-end test automation using Docker and Jenkins to improve software validation and system integration.
  - Conducted extensive system monitoring and performance evaluation through hardware-in-the-loop (HIL) simulations and real-world testing.
  - Collaborated across teams to ensure compliance with ISO 26262 and ASPICE standards, enhancing system safety and reliability.
  - Managed cloud infrastructure and automation using Docker, and YAML configurations for scalable and optimized deployments.
  - Developed and deployed machine learning pipelines, integrating real-time data processing to support system-level diagnostics and improvements.
  - Enhanced API endpoints with robust validation and security mechanisms, ensuring secure and high-performance integration with external systems.
  - Led cross-functional team collaborations, including functional safety reviews, and ensure successful product integration by managing dependencies and configurations.
  - Conducted comprehensive hardware software integration testing using advanced debugging tools to validate system functionality and reliability.
  - Utilized Azure and AWS to design, deploy, and manage resilient cloud-native software components, ensuring high availability, fault tolerance, and top-tier performance.
  - Built and maintained microservices architectures using Kubernetes, Docker, enabling modular, scalable, and maintainable systems.
  - Automated CI/CD pipelines with Azure Pipelines, Git, and Terraform, dramatically improving deployment speed and reducing manual interventions.
  - Experience with Kubernetes and Docker for containerized model deployment.

- Implemented logging and monitoring solutions for system health checks.

- **Achievements:**
  - Reduced manual validation and testing efforts by 70% through end-to-end automation using tools like Jenkins, Docker, and Azure services.
  - Improved workflow efficiency and team productivity by automating PR creation and dependency management with Azure Pipelines and Conan modules.
  - Integrated Snowflake for real-time data analytics, improving the scalability and performance of ML pipelines.
  - Developed a robust framework for system safety compliance and validation, ensuring alignment with ISO standards across all development phases.

**Continental Automotive India Private Limited, Bangalore, Karnataka** May 2019 - July 2021

System Engineer and Scrum Master – ADAS Camera Object Detection

- **Camera Object Detection (COD) - Computer Vision**
  - **Role:** System Engineer and Scrum Master
  - **Technologies:** Python, C++, Oracle, Doors, Dash, Flask, SQLite
  - **Responsibilities:**
    - Designed and developed scalable computer vision solutions for Advanced Driver Assistance Systems (ADAS) using Python and C++.
    - Developed simulation frameworks to validate localization algorithms under diverse environmental conditions.
    - Enhanced object detection models by integrating 2D to 3D mapping algorithms and refining localization techniques using Kalman filters.
    - Led cross-functional team collaborations to define system requirements, ensure effective data processing, and integrate computer vision modules.
    - Developed RESTful APIs to facilitate smooth interactions between vision models and external software components.
    - Automated workflows and data integration pipelines using Python and SQL, reducing manual processes and optimizing system updates.
    - Utilized AWS services such as AWS Lambda, S3, and EC2 to enable event-driven workflows, scalable object storage, and compute-intensive tasks for real-time object detection.
    - Managed data processing pipelines on AWS to handle large-scale data ingestion, ensuring reliable data availability for object detection and localization tasks.
    - Implemented cloud-based data storage and retrieval using AWS S3 and DynamoDB, optimizing system performance and reducing latency.
    - Managed Agile ceremonies, including sprint planning and retrospectives, to improve team productivity and maintain timely project delivery.
    - Deployed scalable cloud-based solutions on AWS and managed efficient data storage and retrieval using Oracle databases.
    - Implemented unit and system-level testing, ensuring system robustness and performance under diverse operational conditions.
    - Collaborated with cross-functional teams to streamline data labeling, training, and deployment processes for object detection models.
    - Automated deployment processes using CI/CD pipelines on AWS, ensuring reliable updates and reducing manual interventions.
    - Created detailed documentation on project progress, system designs, and

deployment configurations to support continuous improvements.

- **Achievements:**
  - Successfully integrated labeled data from Oracle databases for training object detection models.
  - Migrated object detection functionality from 2D box mapping to 3D box mapping, improving system accuracy and performance.

- **AUTOSIM**
  - **Role:** Python AWS Developer
  - **Technologies:** Python, Django, ReactJS, AWS Services
  - **Responsibilities:**
    - Designed AWS CloudFormation templates for infrastructure automation, including Lambda functions, Step functions and IAM policies.
    - Developed Python scripts for API integration, data processing, and storing KPI results in DynamoDB.
    - Utilized an S3 bucket for storing large CSV files related to camera object detection data, ensuring secure and efficient data handling.
    - Designed AWS Cloud Formation templates to create custom lambda functions and to set up IAM policies for users, database templates using Python (BOTO3 & AWS CLI) and JSON Templates.
    - Built a GUI for visualizing test reports and managing test configurations, improving user accessibility.
    - Designed and deployed cloud-based architectures with AWS Lambda, EC2, CloudFormation.
    - Built scalable solutions for data ingestion and storage using AWS S3, DynamoDB.
    - Implemented event-driven workflows in AWS for automation.
  - **Achievements:**
    - Created a prototype for the COD component and expanded it to support multiple integrations, reducing manual effort by 70%.
    - Developed APIs for visualization and test analysis, enabling faster debugging and decision-making.
    - Leveraged AWS services for scalable API management and secure data storage.

**Teradata India Private Limited, Hyderabad, Telangana** Aug 2018 - May 2019
Python Developer and Data Analyst
**PYTERADATA:** Tool to provide Python interface for SQL Analytical Functions on Teradata Database.

- **Technologies:** Python, SQL, JAVA, JIRA and GIT
- **Responsibilities:**
  - Designed and implemented APIs for the PYTERADATA tool using JSON and Java, enabling seamless integration with Python interfaces.
  - Automated Python test file generation based on JSON inputs, improving testing efficiency.
  - Worked extensively with SQL queries on the Teradata Database to validate analytical functions.
  - Learned and implemented various data analytical functions like Ntree, DecisionTree, and KNN for data-driven insights.
  - Utilized Git for version control and collaborated with cross-functional teams using Agile and Scrum methodologies.
  - Leveraged Object-Oriented Programming (OOP) principles to develop and optimize data analytical functions for the Teradata Database Server.
- **Achievements:**
  - Enhanced the development process by automating Python test case generation, reducing manual

effort and improving consistency.
- Gained in-depth knowledge of advanced data analytical functions and their application on Teradata Database.
- Improved team collaboration and productivity by actively participating in Agile ceremonies, including sprint planning and retrospectives.

**Tata Consultancy Services Hyderabad, Telangana** Jun 2014 - Aug 2018
Senior Software Engineer
**DX**: DX is a toolbox which support to install components on real nodes and to create virtual environment to support testing for all components. It contains 7 tools which will help to install components to provide services for telecom industry.

- **Technologies:** Python, Linux, VirtualBox, Jenkins, KIWI, Artifactory, Shell Scripting, PyYaml, Gerrit, SonarQube, Eforge, Confluence
- **Responsibilities:**
    - Automated the installation of components on virtual nodes using Python and Linux environments.
    - Created and managed virtual nodes using VirtualBox, simulating real-world deployment scenarios.
    - Implemented unit and functional test suites to validate component installations and ensure deployment reliability.
    - Integrated test suites with Jenkins pipelines to achieve continuous integration and delivery (CI/CD).
    - Developed and enhanced tools to streamline deployment processes, leveraging **YAML configurations** for defining and deploying systems across various environments.
    - Created and maintained:
        - **csmcli:** A CLI tool to efficiently update YAML files for system configurations.
        - **csmlint:** A validation tool for ensuring the accuracy and consistency of YAML configurations.
        - **CSM Config:** A configuration generator for deployment systems.
        - **csm2iso:** A utility to convert configurations into ISO files for seamless package installations.
    - Automated package management with **Artifactory Manager**, enabling XML-based input for downloading and managing dependencies.
    - Integrated **Python** scripting with **Agile** and **DevOps** methodologies to enhance efficiency and reliability in the software engineering lifecycle.
    - Configured and maintained **Jenkins pipelines** as a bridge between development and operations, automating to fetch the latest code from **Git** repositories, performing regression testing and uploading validated packages to **Artifactory**.
- **Achievements:**
    - Enhanced deployment reliability by automating the installation process for real and virtual nodes.
    - Improved testing efficiency with the seamless integration of functional test suites into Jenkins pipelines.
    - Designed and **implemented** innovative tools that improved deployment workflows, resulting in faster and more reliable releases.
    - Delivered comprehensive client demos of the tools, receiving positive feedback for significantly reducing release times and efficiently addressing new requirements.