

Git Link: <https://github.com/Bhavana5N>

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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
Cybersecurity AI Analyst

May 2025 Present

Cybersecurity MOAB:

- **Technologies:** Python, GraphQL, Databricks, Hex, SQL, GitLab, VERTEX AI
- **Key Contributions & Responsibilities:**
 - Designed and deployed Mechanic Patch Manager automations to streamline dependency security patching.
 - Architected "Beacon," an AI-assisted SAST platform that leverages Google Vertex AI to deliver exploitable security findings directly to CI/CD pipelines.
 - Designed resilient prompt orchestration with Jira context and Databricks feedback loops, cutting false positives >30% for regulated product teams.
 - Scaled scans across large via parallel execution, severity-aware reporting, and automated GitLab MR comment workflows.
 - Built Hex dashboards to prioritize high-risk dependencies and patch compliance and data is stored in databricks.
 - Aggregated dependency and vulnerability analytics via GraphQL services for real-time risk assessments.
 - Implemented ML-driven reviewer recommendations and anomaly detection to accelerate developer response.
 - Partnered with security, ML, and platform teams to align tooling with AI governance and compliance standards.
 - Led cross-functional ceremonies to clarify requirements, unblock delivery, and track continuous

improvement.

- ❑ Added graphs and plots to Databricks dashboards to visualize security fixes and MR status (Open, Merged)
- ❑ Integration slack bot to send notifications for new MRs created by fetching manager email from CODEOWNERS or Contributors.

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.