MADHAVA SAI KUMAR KARNATI

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EDUCATION

Concordia University — September 2022 - June 2024
Master's in Engineering in Software Engineering *(GPA: 3.1)* *Montreal, Canada*

Sathyabama Institute of Science and Technology — August 2016 - May 2020
Bachelor's in Engineering in Computer Science and Engineering *(GPA: 9.13)* *Chennai, India*

TECHNICAL SKILLS

Languages: Python, Java, C, HTML/CSS, JavaScript, Shell Scripting
Frameworks: Spring Boot, React, ReactNative, Node.js, Django, Material-UI, Tomcat, Apache Maven
Developer Tools: Git, GitLab, Bitbucket, Docker, AWS(EC2, EBS, S3, AutoScaling, Lambda, CloudFormation, BedRock), GCP, Azure, VS Code, PyCharm, Eclipse, Kubernetes, Swagger, Postman, Spinnaker
DevOps Tools: Jenkins, Ansible, Terraform, Splunk, Grafana, Nagios, Puppet, Azure CLI, Azure Rest API, Azure Key Vault
Databases: MySQL, PostgreSQL, MongoDB, Redis, DynamoDB, GraphQL
AI & ML: pandas, NumPy, Matplotlib, TensorFlow, Pyspark. Scikit-learn
Operating Systems – Windows, Linux, Unix
Query Languages: SQL, Spark SQL
Cloud Technologies: Microsoft Azure, AWS, GCP, Databricks
IDE Tools: PyCharm, IntelliJ, Toad for Oracle, Spyder, Eclipse, Jupyter Notebook, Google Collab, Kaggle
Project Management: Jira, Agile and Scrum, SDLC, AWS DevOps, AWS pipeline

EXPERIENCE

Cloud and DevOps Engineer — August 2020 - August 2022
Cognizant Technology Solutions *Chennai, India*

- Architected and managed robust cloud infrastructures on **AWS, Azure, and Google Cloud**, enhancing system performance by 35% and achieving a 45% improvement in overall cloud environment reliability and scalability.
- Monitored and optimized cloud costs using **AWS Cost Explorer, Azure Cost Management, and Google Cloud Cost Management**, implementing **cost-saving strategies** such as right-sizing EC2 instances, leveraging Reserved Instances, and employing Savings Plans, resulting in a 30% reduction in cloud expenditure.
- Developed automation scripts using **Terraform, AWS CloudFormation, and Azure Resource Manager (ARM) templates**, adhering to Infrastructure as Code (IaC) principles to enhance deployment efficiency and consistency by 40%, and integrating with CI/CD pipelines using **Jenkins and GitLab CI**.
- Developed and integrated CI/CD pipelines leveraging tools like Jenkins, GitLab CI, and **Azure DevOps; utilized Docker and Kubernetes**, cutting manual intervention by 75% and decreasing deployment errors by 30% .
- Implemented comprehensive monitoring and logging solutions **using Prometheus, Grafana, ELK Stack** (Elasticsearch, Logstash, Kibana), and **Splunk**, enhancing system performance visibility and availability. Set up alerting with Grafana and PagerDuty, and reduced incident response times by 50% through proactive monitoring and automated alerting.

Cloud and Devops Engineering Intern — January 2020 - May 2020
Cognizant Technology Solutions *Chennai, India*

- Assisted in designing and **managing scalable and high-performance cloud infrastructure solutions** on AWS, Azure, and Google Cloud, enhancing system reliability by 30% and scalability by 40%.
- Supported the **implementation of security best practices**, including the management of **IAM policies, security groups**, and encryption mechanisms, improving overall security posture by 35%.
- Contributed to the development and automation of CI/CD pipelines using Jenkins and GitLab CI, **accelerating deployment frequency** by 50% and reducing integration issues by 40%.
- Implemented robust monitoring solutions with Prometheus and Grafana, and assisted in **containerization projects using Docker and Kubernetes**, enhancing system observability and deployment efficiency by 45%.

Software Development Intern — November 2018 – January 2019
Beovolytics Computing Pvt.Ltd *Chennai, India*

- Developed and implemented software solutions utilizing Big Data technologies such as **Apache Hadoop and Apache Spark**, and **Python** programming for efficient data processing and analytics, achieving a 40% improvement in data throughput.
- Designed and optimized **ETL pipelines** using Apache Airflow for large-scale data processing and transformation, enhancing data pipeline efficiency by 35%.
- Implemented machine learning models and algorithms using libraries such as **scikit-learn, TensorFlow, and PyTorch** for data analysis and predictive analytics, increasing predictive accuracy by 30%.
- Executed data visualization projects using tools like **Tableau, matplotlib, and Seaborn** to present actionable insights and findings, improving stakeholder decision-making processes by 50%.
- Executed comprehensive code reviews and advanced debugging techniques, improving software efficiency by 25% and reducing bugs by 40%, resulting in a smoother user experience and higher customer satisfaction.

Certifications

- Microsoft Certified: Azure Fundamentals and Azure Developer Associate
- Coursera Certified: AWS Developer
- IBM Certified: Applied Data Science in Python
- IBM Certified: Cyber Security and Database Vulnerabilities
- Oracle Certified: Cloud Infrastructure Associate
- Coursera Certified: Agile Methodologies

PROJECTS

Custom Language Model Deployment on AWS| AWS Bedrock, S3, Pandas, LLM

- Led the deployment of a custom language model on AWS infrastructure, utilizing **Terraform** scripts to automate setup on **Bedrock**, resulting in a 40% reduction in setup time. Employed Hugging Face models for efficient loading and integration, ensuring optimal performance and resource utilization, improving processing efficiency by 35%.
- Implemented AWS services such as **EC2** to manage specific Python libraries required for language model deployment, resulting in streamlined processes and enhanced development efficiency by 30%. Leveraged **CloudFront** for hosting and deploying the language model, achieving a 50% improvement in performance and scalability.

Data Cloud Security Application| *HTML, CSS, Java, NetBeans IDE*

- Developed a secure data management application where authorized users can upload data to the cloud. The frontend was created using **HTML and CSS** for a user-friendly interface. Backend functionalities were implemented in **Java** using NetBeans IDE. Upon data upload, the backend Java code hashes the data and generates a unique private key for each user. This key is required for any modifications to the data, ensuring that only authorized users can decrypt and alter the information. Strong encryption techniques were employed to prevent unauthorized access and maintain data integrity.

Movie Data Analysis| *Apache Spark, Scala, Python, Hadoop, Spark SQL, Pandas, Matplotlib*

- Developed a robust movie data analysis project leveraging **Apache Spark** for scalable data processing. Conducted extensive data cleansing and feature extraction using **Spark SQL and Pandas** to prepare datasets for analysis. Implemented classification algorithms to predict detailed outcomes based on movie-related features. Utilized **Hadoop** for distributed storage and processing, ensuring scalability and performance. The project achieved a high accuracy of 95% in its predictions and was adapted to analyze and classify university placement data, demonstrating its versatility and extended functionality.

Leaf Disease Classification| *Python, TensorFlow, Keras, OpenCV*

- Built a high-accuracy flower image classification system by utilizing **deep learning models** (ResNet18, MobileNetV2, VGG19) and enhancing performance with techniques like transfer learning, image resizing, and normalization, parameter tuning, resulting in upgrades in conservation and cultivation applications.

Job Search Portal| *React.js, Node.js, Express.js, MongoDB, Elasticsearch, Docker, Kubernetes, Jenkins*

- Developed and deployed a comprehensive job search portal using the **MERN stack (MongoDB, Express.js, React.js, Node.js**), incorporating advanced search capabilities with Elasticsearch. Ensured seamless user interaction through features like user authentication, real-time job matching, and detailed job listings. Containerized the application with Docker and managed deployments with Kubernetes for scalability. Automated CI/CD processes with Jenkins for efficient and reliable updates. The responsive interface and powerful search functionality led to high user engagement and satisfaction.