Vinay Krishna Kumar

vinayk99 vinay2201

Email: vinay.umbc@gmail.com
Mobile : +1 224-666-5667

Summary

Experienced Software Engineer specializing in full-stack development, backend engineering, and cloud architectures. Proficient in Java, Python, AngularJS, Spring Boot, Docker, Kubernetes, and CI/CD pipelines. Skilled in building scalable systems, optimizing performance, and automating deployments. Passionate about solving complex engineering challenges and delivering robust applications.

Skills

Programming Languages:	Python, Java, C++, JavaScript, TypeScript
Frontend Development:	React.js, AngularJS, HTML5, CSS3, Bootstrap
Backend Development:	Spring Boot, Node.js, Flask, RESTful APIs, Microservices Architecture
Cloud & DevOps:	AWS Lambda, Kubernetes, Docker, Jenkins, Terraform, CI/CD Pipelines
Databases and Tools:	MySQL, PostgreSQL, MongoDB, Redis, Git, GitHub, GitLab, Jira, Postman, Tableau, Figma
Machine Learning & AI:	TensorFlow, PyTorch, Scikit-Learn, OpenCV, Federated Learning
Certification:	Oracle Database SQL Certified Associate, AWS Certified Developer – Associate (In Progress).

Experience

- **Research Assistant - UMBC (P.I: - Dr. Nirmalya Roy)** Dec'23 - Current
  - Developed scalable software to simulate and evaluate network performance in virtual multi-robot systems.
  - Designed and implemented machine learning-driven anomaly detection for real-time network optimization.
  - Built RESTful APIs to expose simulation data for efficient system integration.
  - Optimized data pipelines to process large-scale network simulation data, improving availability and reducing processing time by 40%.
- **Research Intern - CARDS Lab, Maryland** May'24 - August'24
  - Optimized Federated Learning model training, improving model performance and adaptability by 25% across 10+ real-world experiments.
  - Designed and deployed a lightweight SLAM algorithm, reducing computational overhead by 30%, and integrated it into real-time robotic navigation systems.
  - Developed microservices for robotic data monitoring, ensuring real-time data analytics and system health tracking.
- **Senior Software Engineer - Tata Communications, Chennai, India** Jul'21 - Aug'23
  - Developed and maintained full-stack applications using Java (Spring Boot), AngularJS, and MySQL, improving application performance and scalability.
  - Designed and built RESTful APIs, enabling seamless data exchange and reducing API response times by 25%.
  - Optimized cloud infrastructure and CI/CD pipelines (Jenkins, Docker, Kubernetes), reducing deployment time by 40%.
  - Refactored and optimized Java backend code, reducing execution time by 30% and improving system efficiency.
  - Implemented caching strategies (Redis) and optimized SQL queries, reducing database query time by 20%.
  - Led a team to develop an internal data analytics dashboard using React.js and Flask, providing real-time business insights.
- **Software Engineer Intern - Mphasis Limited, Bangalore, India** Mar'21 - Jul'21
  - Developed and configured Spring modules using XML, ensuring seamless modular integration within the application.
  - Implemented frontend form validation using JavaScript, enhancing user input accuracy and system security.
  - Optimized Java-based backend processing, improving application responsiveness and maintainability.

Education

- **University of Maryland, Baltimore County (UMBC)** Aug'23 - May'25
  Master of Science, Information Systems *GPA: 3.9/4.0*
  Relevant Course: *Advanced Database Management Systems, Structured Systems Analysis & Design, Decision Making Support System, Machine Learning, Data Mining, Information Extraction*
- **SRM Easwari Engineering College, Chennai, India** Jul'16 - Apr'20
  Bachelor of Engineering, Electronics and Communication Engineering *GPA: 3.9/4.0*
  Relevant Course: *OOPs, Computer Architecture, Computer Networks, DBMS, Signals & Systems, Digital Signal Processing*

Publications and Awards

- Dey, E., Ravi, A., **Kumar, V.K.**, Lewis, J., Freeman, J., Gregory, T., Suri, N., Busart, C. & Roy, N. (2025). DACC-Comm: DNN-Powered Adaptive Compression and Flow Control for Robust Communication in Network-Constrained Environments. In the COMSNETS Conference. (Accepted for publication)
- Dey, E., Ravi, A., **Kumar, V.K.**, Lewis, J. & Roy, N. (2024). Empirically Driven Adaptive Transmission for Enhanced Communication in Adversarial Environment. In the IEEE Military Communications (MILCOM) Conference. (Accepted for publication)
- Best Performer Award in Development for Q4 2022 at Tata Communications.