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Abhishek Singh

Software Engineer

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Education

Carnegie Mellon University, Pittsburgh — **May 2023**
Master of Information Systems Management — GPA: 4.0
Object Oriented Programming | Database Management Systems | Introduction to Machine Learning

Manipal Institute of Technology, India — **July 2018**
Bachelor of Technology in Computer Science and Engineering — GPA: 3.75
Data Structures | Design and Analysis of Algorithms | Operating Systems | Distributed Systems

Skills

Functional	Distributed Systems, Design Patterns, Database Management, DevOps, Full-stack Web Development
Languages	Java, Python, C++, Rust, Javascript, SQL, LaTeX
Frameworks	Spring Boot, Flask, Angular, ROS
Tools	Git, AWS, Pandas, PyTorch, Docker, Jenkins

Technical Experience

RESEARCH ASSISTANT and SYSTEM ARCHITECT | Rethinking Automation in Construction (ReAC) — **June 2022 — Present**
Carnegie Mellon University — *Pittsburgh, PA*

- Using Deep Reinforcement Learning to train differential drive holonomic robots for social navigation in confined construction environments, under Prof. Daniel Cordoso Llach, Yuning Wu (School of Architecture); and Prof. Jean Oh (Robotics Institute).
- Designing system architecture for a ROS-based navigation stack using Deep RL for local path planning trajectory ranking.
- Developing communication mechanism between a Husky's input (3D-Lidar) and the RL modules via ROS-messages.
- Customizing a Dynamic Window local path planner using SLAM, Pedestrian Detection and GA3C-CADRL for Social Compliance.

SENIOR SOFTWARE DEVELOPMENT ENGINEER | Data Control Tower (DCT) — **Nov 2021 — May 2022**
Delphix — *Remote*

- Built an on-prem, self-hosted, scalable central management platform to deliver APIs for supporting DevOps automation workflows like infrastructure provisioning for virtual production database instances to be masked.
- Authored infrastructure automation APIs to provision environments and associated virtual databases for continuous data.
- Introduced tagging support on an object-type basis to simplify searches, filtering reports and batch operations.
- Containerized microservices and automated code generation and dependency installation to improve app launch time by 90%.
- Supported solution architecture, automation, e2e testing and CI.

SOFTWARE ENGINEER | Airline E-commerce — **July 2018 — May 2021**
Amadeus Software Labs — *Bangalore, India*

- Engineered a flexible, large-scale e-commerce community product subscribed by 80+ LCC airlines.
- Architected full-stack solutions for record-persistence and credit-based ticket refunds, protecting 75% airline Covid-19 revenue.
- Orchestrated a multi-branch Jenkins CI/CD pipeline to automate builds, unit tests, binary scans, code quality and deployment to improve change lead time by 90% and reduce build failure rate by 67%.
- Dockerized application deployment orchestrated by Kubernetes to improve release velocity by 75% and reduce QA cost by 50%.
- Authored a PCI-DSS compliant payment service to support authentication and authorization of major credit card providers for global points of sale, handling 1.1 million requests per day ensuring 99.99% service availability.
- Owned the accessibility of the passenger information page using CDK; integrated Angular Reactive forms and Adobe AEM CMS to deliver personalized merchandising content, automate asset management and improve page-load time by 25%.
- Designed e-commerce solution for Air Canada and developed a ticket reservation engine to interface with distribution systems via SOAP-based Spring microservices.
- Provided critical support for high-severity incidents, performed root-cause analysis within SLA and prepared bug reports.

Activities

Research Assistant, CodeLab, Carnegie Mellon University	Summer 2022
Columnist, AIR News, Amadeus Software Labs	2019-2020
President, IEEE Student Branch Manipal	2017-2018
Co-Founder, Engineers Without Borders Manipal	2016-2017