AMAN BHALA

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TECHNICAL PROFICIENCY

- Data Structures
- Algorithms
- System Design
- Microservice architecture
- Machine Learning
- Deep Learning
- Tensorflow
- Kubernetes , Helm
- Docker
- JAVA , Python , C , C++ , Groovy, Go , JAVASCRIPT

EDUCATION

Birla Institute of Technology and Science, Pilani 2016 - 2020

B.E.(Hons.) Electronics and Instrumentation. - 8.4 CGPA

WORK EXPERIENCE

Software Engineer, General Electric (GE Digital)

August 2020 - Present

- Integrated Istio into Foundation cluster and wrote authentication and authorization policies to secure communication between services and outside cluster-pod communication. Also established mTLS throughout the cluster by writing PeerAuthentication and DestinationRule policies.
- Developed a Kubernetes operator in Java for the Foundation cluster to manage Active and Standby sites, including creating Custom Resource Definitions (CRDs) and reconciliation logic for the operator. Later created the ScaledSaco component to automatically scale pods to zero on the Standby Site and scale them up on the Active Site, resulting in around 5% cost savings for some teams.
- Engineered an advanced Grafana dashboard that automates getting ingress certificates from remote sites and configuring the dashboard to get metrics from other clusters during cluster build. Users can track both sites (active & standby) in a single place and can change site state by clicking a button provided in the dashboard. Made the process 100% automated.
- Developed a project called cache container that allows users to run Python scripts to package all images for release into a tarball and pull and push images to and from remote registries like Nexus. Also created a CI/CD pipeline for it that is being used throughout the organization, reducing release activity time from around 2-3 days to just 1.5 hours. (Python/Docker/Jenkins/Groovy)
- Created a Docker image (antora site builder) containing the antora tool and its dependencies. Developed a CI/CD pipeline for automatic creation of PDFs and a website from the team's documentation repository using the antora site builder image. This pipeline and image are also being used across the organization, reducing hosting website and creating PDFs time from days to a few hours. (Docker/Jenkins/Groovy)
- Implemented hotrod protocol using remote cache manager object to get data stored in infinispan caches in various JAVA microservices as part of the login flow . Wrote logic for cleaning up of caches and made other improvements as part of the login flow which involves using SAML(authentication) and OAuth2.0(authorization) provided by Cloudfoundry UAA. (SpringBoot/JAVA)
- To demonstrate various features of Foundation to customers, wrote extensive test cases in JAVA. These test cases showcased capabilities such as batch message processing, automatic enrollment of services into the directory, and incorporation and use of messaging queues like Kafka and Apache Artemis. Created a Product Deployment Image(PDI) and helm charts for easy deployment of these test cases on any Kubernetes environment. (SpringBoot/JAVA/ApacheCamel/Helm/Go Templating) .
- Built Docker images for multiple Foundation microservices, and during releases, scanned and updated these images to fix Critical Vulnerabilities and Exposures (CVEs).
- Hardened various third-party images used by Foundation, including the Zalando-Postgres operator, Infinispan operator, Elasticsearch operator, Kafka, and CloudFoundry UAA, to reduce the number of CVEs. Additionally, minimized the memory footprint of these images by 20% using minimal base images like UBI minimal and removing redundant packages.
- Fixed various helm charts in Foundation to make them compatible with newer K8s versions. To support K8s 1.24, removed the use of service account token and to support K8s 1.25 removed the use of Pod Security Policies and instead use tools like Kyverno.
- To maintain compatibility with newer K8s versions, fixed various Helm charts and deployment logic in Foundation. For K8s 1.24, removed the use of service account token, and for K8s 1.25, removed the use of Pod Security Policies and instead used tools like Kyverno.
- Created ansible tasks for both airgap (no internet access) and non-airgap deployments of RKE2 on AWS nodes. This involved automating the setup of the RKE2 cluster, including node registration, Kubernetes master initialization, and worker node configuration.

- Spring Boot
- Shell Scripting
- Ansible
- NodeJs
- Jenkins

COURSES

- Computer Programming
- Object Oriented Programming
- Operating Systems
- Machine Learning
- Digital Image Processing(Computer Vision)
- Probability & Statistics
- Linear Algebra, Calculus
- Symbolic Logic

LANGUAGE

- English
- Hindi

- Added a security feature to Foundation that logs the username in the application logs whenever communication is made from outside of the cluster to a service inside the cluster. This provides better visibility and security controls for Foundation's users.
- Wrote comprehensive documentation and tutorials on different components of Foundation and how to use them. This involved creating clear and concise guides to help users understand the various features of Foundation and how to utilize them effectively. These tutorials were aimed at both new and experienced users, and helped them to quickly get up to speed with Foundation.
- Acted as a technical resource for cross-functional teams, providing training, documentation, and troubleshooting assistance to ensure successful adoption and usage of Foundation.

Software Intern - NVIDIA

Jan 2020 - July 2020

- Added support for newer fields for testing newer generation of chips.
- Added test cases in Python for the tools as well as for newer features developed.
- Successfully migrated and rebased tools from Python 2 code to Python 3 code.
- Updated code to use software best practices using python package known as Pylint.
- Updated API's in the tools to support newer databases hosted by IT department.
- Resolved bugs and provided support to other teams.

PROJECTS

E-commerce Application in JAVA using Spring Boot

- Engineered an e-commerce application with customized landing pages for buyers and sellers.
- Given option to buyers and sellers to create account and stored their passwords in inbuilt H2 database.
- Sellers can list products to sell and buyers can buy from available options. Stored these data in the H2 database.
- Used Model-View-Controller(MVC) architecture to build the application
- Created REST API's for interaction between model and view layers.
- Dockerized the application and deployed it on Kubernetes cluster.

Student Management System

- Created a Spring Boot application using MVC architecture. Used thymeleaf and spring-data-jpa to build the application were student details can be added,updated and deleted.

Spring Security Based Login Page

- Created a spring boot application using mvc architecture, thymeleaf, spring-data-jpa and spring-security.
- User can sign up on the website and access the registration form. If new user, users can sign up otherwise they can directly sign in.

Newsletter SignUp Website

- Created blog website using Node.js
- Users can add their email and can subscribe to the newsletter. They can also write blogs on the website. Deployed on heroku.

Person Tracking and Re-identification in Videos

- Implemented Neural Network(NN) by reading a research paper
- Wrote logic around implementing NN and capturing user data as screenshots in Python

Comparitive analysis of ML algorithms with Neural Networks

- Built and trained image classifiers based on Supervised learning techniques and Convolutional Neural Network seperately.
- Trained the models on fashion_mnist and celebrity dataset
- Did a comparative analysis of CNN with Supervised learning algorithms

Finger detection and Tracking

- Wrote code to capture live user feed from webcam and using OpenCV libraries tried to identify user's finger and track them when finger is moved.

CERTIFICATIONS

Andrew Ng Deep Learning Specialisation

- Convolutional Neural Networks
- Neural Networks and Deep Learning
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
- Structuring Machine Learning Projects

Udemy Full Stack Developer Course

Udemy Data Structures and Algorithms in C++