Aghanash Karthik Kumar

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EDUCATION:

Northeastern University, Boston, MA *Sept 2016-May2018*
Candidate for Master of Science in Computer Systems Networking and Telecommunications **GPA: 3.85/4**
Relevant Course Work: - Data Networks, IP Telephony, Software Defined Networking, Network Security, Data Structures and Algorithms

PES University, Bangalore, India *Aug 2010-May2014*
Bachelor of Engineering in Telecommunication Engineering.
Relevant Course Work: - Computer Communication Networks, Operating Systems, Network Security, Mobile Communication, Microcontrollers

TECHNICAL SKILLS:

Operation Systems:	**Windows, LINUX (Debian, RHEL)**
Programming and Scripting languages:	**C, Angular 7, Bash, Python Development, Groovy, YANG, YAML, Java Script, Golang**
Software and Tools:	**SIPp, Wireshark, JMETER, Kubernetes, Spirent, Ansible, GIT, Kafka, Terraform, Docker**
Web Services and Technologies:	**HTML, CSS, DHTML, XML, REST, SOAP, GraphQL**
Frameworks:	**Bootstrap, Django, Node.JS, Angular JS, ES6+, Flask**
Networking Protocols:	**HTTP, DNS, DHCP, NETCONF, SIP, TCP, UDP, RIP, VRRP, LACP, OSPF**
Testing Frameworks:	**Junit, ROBOT, JXL, JTest, Chai Mocha, Jasmine, Protractor, TestNG, PyTest**
Virtualization and Cloud Platforms:	**OpenStack, VM Ware ESXI, AWS (EC2, Route 53, S3, VPC, SQS, Cloud Watch), KVM V.5.0, Azure, OpenShift**
Methodologies Known:	**Agile, Kanban**

PROFESSIONAL EXPERIENCE:

Lynk Global, Falls Church, VA
Software Engineer **Jan2025 -Present**

- Designed and architected an end-to-end automation pipeline in **GitLab** that messages direct to device from the satellites deployed using **Robot Framework.**
- Designed the test framework using **Python** libraries to validate the backend **Postgres DB** entries and validate the correctness at different checkpoints.
- Developed the API endpoints using **Flask** and **Python** to validate the queries sent from the API client endpoints.
- Designed and developed a custom UI in **React** and **GoLang** which orchestrated the test cases and the Test Management System.
- Developed unit tests using **Pytest** and **Robot Framework** and **Python** which were represented with **Allure** reporting
- Designed and developed the Satellite build pipeline where the application are containerized and leverages **GitLab** as a CI/CD system.
- Worked on **Dockerizing** the application using cross compilers for **armhf**, **aarch64** and **arm64** with sysroot with a layered docker structure.
- Designed the orchestration pipeline in **GitLab** with parallel job execution and **artifact, container, package registries** to manage the **containers** and **binaries**
- Designed the **Prometheus** and **Grafana** dashboards to monitor the **EC2** and **RDS** instances with **CloudWatch** logging and monitoring.
- Designed an **Ansible vault** solution to fetch artifacts and deploy from/to multiple servers reducing the deployment time by 40%.
- Architected the build system for the **containerized** architecture using **Docker** with application binaries built from the repositories.
- Worked on testing the satellite to phone messages and vice versa for GSM, LTE scenarios for general release tests.

Databuoy Corporation, Tysons VA
Devops Engineer **Jul 2024- Jan 2025**

- Worked on systems service integrations for embedded devices.
- Worked on the time sequence diagrams for the embedded devices and the sequence of **systemd** service interaction for network interfaces.
- Designed a solution to integrate AWS instances using **Terraform** with **Datadog** using the access tokens.
- Installed and deployed the sensors onsite for customers with network configurations in place.
- Designed the solution for commands sent using **RabbitMQ** to reach the embedded devices using a custom App developed using **Javascript** and **GoLang**
- Worked on setting up **Prometheus** Dashboards for the sensors deployed to take the metrics pertaining to temperature, heartbeats and custom system metrics.
- Worked on setting up wifi access points with **hostapd** and **wpa_supplicant** as the AP and the clients for the sensors.
- Worked on **Ansible** and IAC to provision embedded devices for ssh **reachback**, **node_exporter**, **systemd** services.
- Developed **Ansible** scripts to deploy platform dependencies and used **Terraform** to provision EC2 with **EBS, VPC, Security Groups** with the **DNS** on **Route53**
- **D**eveloped the **Python** modules to populate the **Grafana** dashboards based on the embedded devices provisioned at different sites**.**
- Proven ability to collaborate with cross functional teams to improve system reliability and reduce deployment times and enhance scalability.

Hughes Network Systems, GermanTown, MD **Aug 2023 – June 2024**
Senior Systems Engineer

- Orchestrated the **Openshift** Kubernetes cluster for PAAS solutions for IPI and UPI solutions on **Vmware** and KVM with **Trident** backend storage as **NAS**.
- Designed the architecture network infrastructure for lab and enterprise with NetApp and Cisco Nexus 9K and 3550 switches and routers.
- Automated and developed the pipeline for enterprise system health checks using **Ansible Automation Platform** and dynamic inventory.
- Designed the ansible tenant solutions for the execution of the network enterprise code to connect to switches and routers.
- Developed solutions to have application micro service deployments to be migrated from on-perm to **EKS, ROSA, ARO** clusters.
- Developed the **Auditd** rules for RHEL 6/7/8 systems for enterprise systems to have the indexers referenced on **splunk** dashboard using **Ansible.**
- Developed **Python** modules for **Fortinet** DMZ configurations using client-side APIs in the lab and production environments.

ST Engineering iDirect, Herndon, VA
Senior Software Engineer **Mar 2022- July 2023**

- Automated the test for performance load to use **websocket** connections (**SockIO** and **Pubsub**) with the server to have the client-server model complete.
- Mentored junior engineers in code reviews, design improvements and code enhancements.
- Validated and devised Ansible layouts for release builds for the deployment and testing to reduce the manual efforts by 60% of the deployment time.
- Developed automated tests for **Kafka** external topics which were used to
- Orchestrated the in-house design and setup for the company test network using **Terraform** and **AWS.**

- Devised the in-house solution of an air gap registry with **Red Hat OpenShift** with the network, compute, and storage in the solution.
- Developed the K8s **GitOps** solution using **Argo CD** and wrappers around **Helm.**
- Developing registries and tools on **Red Hat OpenShift** platform for in-house application deployment using **IAC** tools and **GoLang.**
- Tested, analyzed sandbox/development environments to have the FIT, Unit tests and UATs using **Terraform** and **Python APIs** for AWS and Azure Cloud.
- Configured the switching layout and configurations for **Cisco Nexus/IOS** and **Pluribus** switching fabric.
- Working knowledge of Agile and Scrum.

System Development Engineer (Engineer II) ***Mar 2021- Mar 2022***

- Automated the tests in **JMETER** for a **distributed scale environment** with **100 Threads concurrency** for **websockets** with **JUNIT** reports
- Worked on the **Groovy** integration of the tests developed with **GTest** and integration of the same with **Jenkins** and **Sauce Labs.**
- Developed the protractor framework in **NodeJS** with a multi node **Kubernetes** cluster with required network overlays for the application deployment on across the cluster pods.
- Worked on **Docker-Compose** for the cluster pods for the application servers to be up and running.
- Experienced with Docker container service and applications by creating Docker images from **Jenkins** with CI/CD tools.
- Developed and automated **IAC** CI/CD solutions for the network components in a distributed system using **Terraform, packer** and **AWS**.

System Development Engineer (Engineer I) ***July 2018- Mar 2021***

- Developed the framework for traffic tests using Robot Framework and python as a BDL with the modules.
- Analyzed and developed a nightly build pipeline framework for component tests, unit tests and sanity tests for Release Validation for build pipelines in production.
- Computed the performance benchmark for the application which is in-house deployed.
- Developed a module in python with **REST API** calls from the backend and computes the parameters with the **CI** integration using **Jenkins**.
- Modeled a python framework which computes the system performance with display metrics using **Grafana** and Elasticsearch with **PostgreSQL**.
- Working knowledge of **Agile Scrum** and **Kanban** methodology models.

ST Engineering iDirect, Herndon, VA
Software Engineer, Intern June 2017-Nov2017

- Debugged and troubleshot the issues in the distributed network for **Packet Error Rates** and **Packet Losses** using **IXIA** and **Spirent and TCP Dump.**
- Developed a tool in python using **NCCLIENT** to pick up **YANG** modules using **NETCONF** to modify configurations on a Cisco NXOS 5K switch.
- Developed a **Continuous Integration (CI) tool** using **Ansible Playbooks**, **Jenkins,** and **python** to resolve platform dependencies and configurations.
- Worked on the setup of the **VPP (Vector Packet Processing)** with the **OpenVSwitches** and **OpenStack**

Sonus Networks Inc, Bangalore, India
Systems Engineer (Quality Assurance R&D) ***July 2014 – May 2016***

- Devised the test architecture for WebRTC with **NGINX** and **Apache Tomcat** to deploy the framework for **High Availability.**
- Designed test scenarios and tested **SNMP traps and alarms** for **WebRTC** using **REST** Interface from the Unity Explorer UI.
- Automated the feature test cases using the **RESTAPIs** using **Selenium** using a custom developed testing UI.
- Debugged and regressed the failure scenarios and customer interaction.
- Deployed and tested the application servers across **OpenStack (Neutron, Nova, Cinder), KVM hypervisor.**

CERTIFICATIONS:

- Kubernetes Certification-Application Development
- AWS Certified Solutions Architect (AWS CSA) – Associate
- Terraform Associate Certification- Hashicorp
- Introduction to ML and AI on Google Cloud - Coursera
- Build, Train and Deploy ML Models with Keras on Google Cloud - Coursera
- Machine Learning Operations (MLOps): Getting Started - Coursera
- ML Pipelines on Google Cloud - Coursera

ACADEMIC PROJECTS:

- **Overlay Networks using GRE and VXLAN tunnels: -** Integration of **Open stack** compute and controller nodes with the Open **daylight** controller using the **ML2 plugin** with the **Northbound API** and the connection to the hosts using the **Southbound APIs** with the **VXLAN** and **GRE** tunnels implemented between hosts on Open stack.
- **Implementation of a Webapp using Elastic Beanstalk on EC2 AWS: -** Setup of the python web environment for the study of the network elements present in the **distributed network.** The **Django** project is created for the **python web application**. The data is fetched in from the database to give the network elements details.
- **Weather Application to send updates with a Full stack implemented: -** The application flags for any severe changes with application deployed on AWS. Implemented the database using **MySQL** with the monitoring done for the system done using **Splunk**.
- **Python Projects: -**
  - **Web Crawler** with the HTML tags collected for specific flags which is traced across the entire web page and capture HTTP error codes.
  - Implemented a client to compute the mathematical operations until the hash gets returned from the server on **SSL**.
  - Implemented a **Raw Socket** using Python and designed an algorithm to create IP, TCP and Ethernet header while sending/receiving packets from server.