Aghanash Karthik Kumar

| 202.355.4725|agh.karthik@gmail.com

[**https://www.linkedin.com/in/aghanash-karthik**](https://www.linkedin.com/in/aghanash-karthik%20) **|** [**https://github.com/akarthik1709?tab=repositories**](https://github.com/akarthik1709?tab=repositories)

**PROFESSIONAL SUMMARY:**

* **Having 10+ years of professional experience as a Python Developer** in Design, Development, Implementation of **Python, Django, Flask, Pyramid and client - server technologies-based applications, RESTful services, AWS, C, C++, SQL, NoSQL.**
* Experience with Design, code, debugging operations, reporting, data analysis and Web Applications utilizing Python.
* Experienced in implementing **Object Oriented Python, Hash Tables (Dictionaries)** and **Multithreading**, Django, MYSQL, Exception Handling and Collections using Python.
* Experience in writing **JSON REST APIs** using Golang.
* Exposure to CI/CD tools - Jenkins for Continuous Integration, Ansible for continuous deployment.
* Worked with MVW frameworks like Django, Angular JS, HTML, CSS, XML, Java Script, Bootstrap.
* Proficient in Python **Open stack** APIs, AWS APIs and GUI framework.
* Experience in UNIX/Linux shell scripting for job scheduling, batch-job scheduling, automating batch programs, forking and cloning jobs.
* Exposure to CI/CD tools - **Jenkins** for Continuous Integration, **Ansible** for continuous deployment.
* Extensively worked on Jenkins, Build Forge for continuous integration and for End-to-End automation for all build and deployments.
* Experienced with containerizing applications using Docker.
* Experience with **Unit testing/ Test driven Development (TDD), Load Testing**.
* Good Experience on testing tools like **JIRA** and Bugzilla for bug tracking.
* Excellent interpersonal and communication skills, efficient time management and organization skills, ability to handle multiple tasks and work well in team environment.
* Experienced in **WAMP (Windows, Apache, MYSQL, and Python/PHP)** and **LAMP (Linux, Apache, MySQL, and Python/PHP)** Architecture.
* Experience in **Amazon Web Services** (AWS) cloud platform like **EC2, Virtual private clouds (VPCs), Storage models (EBS, S3, instance storage), Elastic Load Balancers (ELBs).**
* Experienced in developing API services **in Python/Tornado**, while leveraging **AMQP** and **RabbitMQ** for distributed architectures.
* Understanding of Python Best Practices (**PEP-8**).
* Well versed with design and development of presentation layer for web applications using technologies like **HTML, CSS,** and **JavaScript**.
* Worked on **SQL** and **PL/SQL** stored procedures, which are used to create access to data, and deployed them to Oracle and SQL server databases.
* Familiar with **JSON** based **REST** Web services and Amazon Web Services (AWS).
* Experienced in developing Web Services with Python programming language.
* Experience in using **XML, SOAP, REST** webservices for interoperable software applications.
* Used all major **ETL** transformations to load the tables through Informatica mappings.
* Strong experience in big data, **Bigdata** Integration and Analytics technologies including **Apache Spark, Hadoop, Kafka, Storm**.
* Experience in **Azure** Storage services for messaging and storing documents.
* Experience in using build/deploy tools such as **Jenkins, Docker, and OpenShift** for Continuous Integration, Deployment of Microservices.
* Expertise in utilizing **Redis** with different data types, connections, pub sub and server management.
* Expertise in unit test frame works like **PyTest**.
* Experience in using **XML, SOAP, REST** webservices for interoperable software applications.
* Exhibited exceptional troubleshooting and debugging proficiency, adeptly identifying, and resolving
* Performance bottlenecks and other issues in **Fastapi** and **Redis** applications.



**EDUCATION:**

**Northeastern University, Boston, MA**

**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**

### 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, Centos)

**Programming and Scripting languages: C, C++, Angular 7, Bash, Python Development, Groovy, YANG, YAML, Java, Shell 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**

**Databases: Mongo DB, Redis, Cassandra, PostgreSQL, MySQL, MariaDB**

**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:**

**Hughes Network Systems, Germantown, MD** **July 2023 – Present**

**Senior Software Engineer**

* Gathered requirements and translated the Business details into technical design.
* Participated in all the stages of software development lifecycle (**SDLC**) like design, testing development and implementation.

# 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 the **Auditd** rules for RHEL 6/7/8 systems for enterprise systems to have the indexers referenced on **splunk** dashboard.
* Developed python modules for **Fortinet DMZ** configurations using client-side APIs in the lab and production environments.
* Extensively worked with **spark Data frames** for ingesting data from flat files into **RDD's** to transform unstructured data

and structured data.

* Developed various **API’s** for Django applications using **Django-tasty pie**.
* Created Docker containers leveraging existing Linux Containers and AMI's in addition to creating Docker containers from scratch.
* Worked on **Amazon Web Services** (AWS) infrastructure with automation and configuration management tools such as **Chef** and **Puppet**.
* Used Python based GUI components for the front-end functionality such as selection criteria. Administration of dedicated

collocated **RHEL 7** machine and configured complex Apache configuration files.

* Used Python scripts to update content in the database and manipulate files.
* Generated Python **Django** Forms to record data of online users.
* Implemented responsive user interface and standards throughout the development and maintenance of the website using the **HTML, CSS, JavaScript, Bootstrap, jQuery.**
* Front-end web development using HTML/CSS, jQuery, Bootstrap as well as back-end development using Golang and SQL.
* Experienced in building a Command line tool to interact with **RESTful** API using in **Golang**.
* Performed efficient delivery of code based on principles of Test-Driven Development (**TDD**) and continuous integration to keep in line with **Agile** **Software Methodology principles**.
* Used Python and **Django** creating graphics, **XML processing, data exchange and business logic implementation.**
* Used **Pandas** API to put the data as time series and tabular format for east timestamp data manipulation and retrieval.
* Used Flask to connect front-end to back-end, **CherryPy** to build the server and word clouds to visualize movies.
* Used **Go Lang** to create backend servers. Developed Micro services using **Go** language and developed corresponding test cases.
* Continuous deployment with **Jenkins** using **Blue-Green** deployment model within open shift environment.

**Environment**: Python, Django, Angular.js, CherryPy, Golang, HTML5, CSS, Bootstrap, JSON, JavaScript, AJAX, RESTful web service, MongoDB, MySQL, jQuery SQLite, Elastic search, Docker, Windows 12 Server, AWS (EC2, S3), PyUnit, Jenkins

# ST Engineering iDirect, Herndon, VA

# Senior Software Engineer Mar 2022- June 2023

# Developed the framework 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 functionality for Kafka external topics used to stream data from the producer to consumer groups for specific partitions.

# Design and developed the Kafka producer and Kafka consumer for data streaming of the payment transactions.

# Integrate the data collectors like Fluentd, Elastic search, Kibana to the applications.

# Designed flexible data models that accommodated future scalability requirements, allowing the system to adapt to changing business demands without compromising performance.

# 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.

# Used Go Lang to create backend servers. Developed Micro services using Go language and developed corresponding test cases.

* Contributed source code in Golang to developing an automation framework for **AWS** **CFN**.
* Developed and tested many features for dashboard using **Python, Django and JavaScript**.
* Worked with millions of database records daily, finding common errors and bad data patterns and fixing them.
* Designed and developed **ETL APIs** which will automate the data mining in different database sources.
* Exported/Imported data between different data sources using **SQL** Server Management Studio.

# Configured the switching layout and configurations for Cisco Nexus/IOS and Pluribus switching fabric.

* Designed and developed the **Pytest** coverage reports for the test scenarios for the application under test.
* Generated graphical reports using python package **Numpy** and **Matplotlib**.
* Used **Docker** to implement a high-level API to provide lightweight containers that run processes isolation and worked on creation

of customized **Docker** container images tagged and pushed the images to the Docker repository.

* Worked in development of applications especially in **UNIX** environment and familiar with all its commands.
* Refactored existing project to make it more **RESTful** and thread safe.
* Wrote and executed various **MySQL** database queries from python using **Python-MySQL** connector and **MySQL** dB package.
* Working knowledge of **Agile and Scrum**.
* Perform Production support by creating a high priority incident ticket in Smart IT and work with members of the team to resolve incidents within **SLA**, ensuring that affected channels and management are always kept informed.

 **Environment:** Python, Django, Golang, Angular.js, HTML5/CSS, UNIX, MS SQL Server 2013, AWS, T-SQL, Reports, Eclipse, Linux, Shell Scripting, Restful, Terraform, GoLang, OpenShift, Kafka DataStream’s, Helm

**Software Engineer (Engineer II)**  **Mar 2021- Mar 2022**

* Automated the tests in **JMETER** for a **distributed scale environment** with **100 Threads concurrency** for **web sockets** with **JUNIT** reports and metrics displayed on **Grafana.**
* Developed Wrapper in Python for instantiating multi-threaded application.
* 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 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**.
* Developed the tools using Python Django and used MongoDB for databases. Parsers written in Python for extracting useful data from the design database. Used **Parse kit (Enigma.io)** framework for writing **Parsers** for **ETL** extraction.
* Used Django configuration to manage URLs and application parameters.
* Wrote Automation test cases using Selenium WebDriver using Python API.
* Used Python and **Django** creating graphics, XML processing, data exchange and business logic implementation.
* Used **Pandas** API to put the data as time series and tabular format for east timestamp data manipulation and retrieval.
* Developed the Data Access layer using **DAO** pattern to perform **CRUD** operations for payment transactions on **PostgreSQL** and **Mongo** **Data bases**.
* Developed entire frontend and backend modules using Python on **Django** Web Framework by implementing **MVC** architecture.
* Experience in creating Docker containers leveraging existing Linux Containers and AMI's in addition to creating Docker containers from scratch.
* Developed designs using the **MongoDB** database concepts such as **locking, transactions, indexes, Sharding, replication, schema design.**
* Deployed and monitored scalable infrastructure on Amazon web services (AWS).
* Managed large datasets using **Panda** data frames and **MySQL**.
* Setting up databases in **AWS** using **RDS** and configuring instance backups to **S3** bucket.
* Designed **RESTful** **XML** web service for handling **AJAX** requests.
* Refactored existing project to make it more **RESTful** and thread safe.
* Used Go Lang to create backend servers. Developed Micro services using **Go** language and developed corresponding test cases.
* Continuous deployment with **Jenkins** using **Blue-Green** deployment model within open shift environment.
* Utilized **Pydantic** for data validation and modeling, enhancing data consistency and **API** documentation.
* Developed custom caching middleware using Redis framework for **Fastapi** applications, resulting in efficient data retrieval and minimized server load.
* Implemented web applications in Flask and spring frameworks following **MVC** architecture.
* Installing, configuring and upgrading **EMC Power-path for AIX servers**.
* Used Django configuration to manage URLs and application parameters.
* Wrote Automation test cases using **Selenium WebDriver** using Python API.
* Worked on **Amazon Web Services** (**AWS**) infrastructure with automation and configuration management tools such as **Chef** and **Puppet**.
* Worked on Python **Open stack API's**.
* Wrote **Automation** test cases using **Selenium WebDriver using Python API**.
* Installed **Veritas** Cluster Server on **Solaris**, with **Oracle** agent.
* Used **Python** scripts to update content in the **database** and **manipulate** files.
* Generated Python **Django** Forms to record data of online users.

**Environment**: Python, Amazon AWS S3, MySQL, HTML, Angular.js, Django, HTML5, CSS, XML, MS SQL Server, AWS, Linux, Shell Scripting, AJAX.

## Software 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.
* Modelled 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.
* Familiar with **UNIX / Linux** internals, basic cryptography & security.
* Implemented database access using **Django ORM**
* Implemented user interface guidelines and standards throughout the development and maintenance of the website using **CSS3, HTML5, JavaScript, Angular.js.**
* Responsible for design and developing an interface to log all the API calls to logging server.
* Performed functional testing for the application using **Mocha, chai, and jasmine** framework.
* Hands-on experience in writing and reviewing requirements, architecture documents, test plans, design documents, quality analysis and audits.
* Setting up databases in **AWS** using **RDS** and configuring instance backups to **S3** bucket.
* Worked with **PIP** in managing software packages written in **Python**.
* Involved in development of Web Services using **SOAP** for sending and getting data from the external interface in the XML format.
* Used **Django** configuration to manage **URLs** and application parameters.
* Built various graphs for business decision making using Python **matplotlib** library.
* Wrote and executed various **MYSQL** database queries from Python using **Python-MySQL** connector and **MySQL** dB package.
* Work closely with development teams to integrate their projects into the production **AWS** environment and ensure their ongoing support.
* Performed troubleshooting, fixed and deployed many **Python** bug fixes of the two main applications that are main source of data for both customers and internal customer service team.
* Used **Go** Lang to create backend servers. Developed Micro services using Go language and developed corresponding test cases.

**Environment**: Python, Go, RDS, Unix/Linux (RHEL, Centos, FreeBSD), Django, Chai-Mocha Framework, JavaScript, REST APIs, PostgreSQL, Grafana, Elasticsearch, Robot Framework

**Magellan Health- Richmond, VA Nov 2017 – Jul 2018**

**Python Full Stack Developer**

**Responsibilities:**

* Gathering requirements and translating the **Business details** into **Technical design**.
* Participated in all the stages of software development lifecycle **(SDLC)** like design, testing development and implementation.
* Developed entire frontend and backend modules using **Python**on **Django Web Framework**by implementing MVC architecture.
* Developed the tools using **Python Django**and used **MongoDB**for databases. Parsers written in Python for extracting useful data from the design data base. Used Parse kit (Enigma.io) framework for writing Parsers for ETL extraction.
* Implemented responsive user interface and standards throughout the development and maintenance of the website using the **HTML**, **CSS**, **JavaScript**, **Bootstrap, jQuery**.
* Extensively worked with **spark Data frames**for ingesting data from flat files into RDD's to transform unstructured data and structured data.
* Worked on MongoDB database concepts such as locking, transactions, indexes, Sharding, replication, schema design.
* Experience in creating **Docker** containers leveraging existing Linux Containers and AMI's in addition to creating Docker containers from scratch.
* Integrate the dynamic pages with **Angular.JS** and **jQuery** to make the pages dynamic.
* Setup Docker on Linux and configured Jenkins to run under Docker host.
* Developed various API’s for **Django** applications using **Django-tasty pie**.
* Used JIRA to build an environment for development.
* Developed Wrapper in Python for instantiating multi-threaded application.
* Creating **RESTful** web services for Catalog and Pricing with **Django MVT**, **MySQL**, and **MongoDB**.
* Fixed bugs, providing production support, enhanced applications by improving code reuse and performance by making effective use of various design patterns.
* Deployed and monitored scalable infrastructure on Amazon web services (**AWS**).
* Implemented monitoring, established best practices around using Elastic search,and used AWS Lambda to run code without managing servers.
* Front-end web development using HTML/CSS, jQuery, Bootstrap as well as back-end development using **Golang** and **SQL**.
* Used Python based GUI components for the front-end functionality such as selection criteria. Administration of dedicated collocated RHEL 4 machine and configured complex Apache configuration files.
* Experienced in building a Command line tool to interact with RESTful API using in **Golang.**
* Familiar with **UNIX**/ **Linux**internals, basic cryptography & security.
* Generated graphical reports using python package **Numpy** and **Matplotlib**.
* Implemented task object to interface with data feed framework, invoke database message service setup, and update functionality.
* Performed efficient delivery of code based on principles of Test-Driven Development (**TDD**) and continuous integration to keep in line with Agile Software Methodology principles.

**Environment:** Python, Django, Angular.js, CherryPy, Golang, HTML5, CSS, Bootstrap, JSON, JavaScript, AJAX, RESTful web service, MongoDB, MySQL, jQuery SQLite, Elastic search, Docker, Windows 12 Server, AWS (EC2, S3), PyUnit, Jenkins, Selenium Automation Testing.

 **ST Engineering iDirect, Herndon, VA June 2017- Nov2017**

## Software Engineer

* 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**
* Used Restful APIs to access data from different suppliers.
* Support the scripts configuration, testing, execution, deployment and run monitoring and metering.
* Used Python and **Django** creating graphics, XML processing of documents, data exchange and business logic implementation between servers.
* Used Restful API must gather network traffic data from Servers.
* Integrate the log4J to application to collect the applications runtime information.
* Develop user interface of applications using **HTML, CSS, bootstrap, and JavaScript**.
* Developed client-side validations using JavaScript form validations.
* Involved in consuming RESTful Web services to render the data to the front page.
* Developed UI using **HTML, AJAX, JavaScript and jQuery and jQuery UI**.
* Re-engineered various modules for implementing changes and creating efficient system.
* Developed rich UI web application using **JavaScript** libraries like **jQuery UI, DataGrid, jscolor, and high charts**.
* Designed and developed components using Python with **Django** framework. Implemented code in python to retrieve and manipulate data.
* Used MySQL as backend database and **MySQL** dB of python as database connector to interact with **MySQL** server.
* Used **Restful** **APIs** to access data from different suppliers.
* Support the scripts configuration, testing, execution, deployment and run monitoring and metering.
* Used Python and **Django** creating graphics, XML processing of documents, data exchange and business logic implementation between servers.
* Used **Ajax** for requesting data and response processing.

**Environment**: Python, Amazon AWS S3, MySQL, HTML, Angular.js, Django, HTML5, CSS, XML, MySQL, MS SQL Server, JavaScript, AWS, Linux, Shell Scripting, AJAX.

**Ribbon Communications Inc, Bangalore, India July 2013 – May 2016**

## Software Engineer (Python Development)

* 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.
* Debugged on SIP call flows through Session Border Controllers and Proxy servers and Media Gateways.
* Designed test scenarios for call flows and transcoding scenarios for proxy and **WebRTC** endpoints.
* Deployed and tested the application servers across **OpenStack (Neutron, Nova, Cinder**), KVM hypervisor.
* Developed and executed **User** **Acceptance** **Testing** portion of test plan.
* Wrote Python scripts to **XML** documents and loaded the data in the database.
* Used standard Python modules e.g., **csv, itertools, jinja** for development.
* Performed data extraction and manipulation over large relational datasets using **SQL, Python,** and other analytical tools.
* Used Python libraries and **SQL** queries/subqueries to create several datasets which produced statistics, tables, figures, charts and graphs.
* Wrote validation scripts in SQL to validate data loading.
* Followed **Agile** Methodology and **SCRUM** Process.
* Performed **Unit** and **system testing**.
* Designed and developed front-end GUI application using **JSP, HTML, JavaScript, CSS, Ajax**.
* Designed controller and business logic using **Spring** **MVC** modules.
* Developed forms using **HTML** and performing client-side validations using **JavaScript** and **Bootstrap**.
* Extensively developed stored procedures, triggers, functions and packages in oracle **SQL, PL/SQL**.
* Utilized Python in the handling of all the hits on **Django, Redis**, and other applications.
* Implemented **SOAP** using web services to interact with various devices to pull real-time data on the network.
* Wrote and executed various **MYSQL** database queries from Python using **Python-MySQL** connector and **MySQL** dB package.
* Worked with PIP in managing software packages written in **Python**.
* Involved in development of Web Services using **SOAP** for sending and getting data from the external interface in the XML format.
* Manage, collaborate, and coordinate the work of an offshore development team.
* Wrote Python scripts to **XML** documents and load the data in the database.
* Loading, analyzing and extracting data to and from Oracle Database with Python.
* Cleansing data generated from weblogs with automated scripts in Python.
* Using **Mongo DB-NoSQL** database for storing the information.
* Experience in writing complex queries to retrieve the data from **MongoDB** using aggregation.
* Used SVN repository for software configuration management and version control.

**Environment**: Python, Apache Tomcat, SBC, Openstack, Javascript, Django, Redis, MySQL, SOAP, REST APIs, HTML, MVC modules, Selenium Web Testing,

**CERTIFICATIONS:**

* CKAD – Certified Kubernetes Application Developer
* AWS Certified Solutions Architect (AWS CSA) – Associate
* Terraform Associate Certification- Hashicorp
* Cisco Certified Network Administrator – CCNA
* Artificial Intelligence on Microsoft Azure

**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**.
* **OpenAI integration with Python on a Microservice Architecture: -** Added the kubernetes architecture with OpenAI lib in python django to have the application launched. Built the docker image with the deployment manifests for the kubernetes environment. Added pods in individual namespaces with containerized workloads for the applications and brought up the applications using kubeadm, minikube.
* **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.