**Aravind K**

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**PROFESSIONAL SUMMARY:**

* Experienced Gen AI Developer with 2 years of expertise in building AI-driven solutions using advanced models like GPT and OpenAI Whisper, 3+ years as a Python Developer specializing in developing scalable applications, and 1.5+ years in testing and data center technician roles.
* Proficient in Python, Flask, Ruby on Rails, NextJS, SQL, embedded systems, vector databases, openAI models and testing frameworks.
* Experienced with OpenAI’s ILLama 2 and Ilama3 model for advanced natural language understanding and generation tasks.
* Experienced in building and fine-tuning generative AI models for various applications.
* Hands-on technical experience in Python, DB2 SQL, and R programming with primary exposure.
* Experience with Amazon Web Services (Amazon EC2, Amazon S3, Amazon RDS,
* Amazon Elastic Load Balancing, Amazon SQS, AWS Identity and access management, Amazon SNS, AWS Cloud Watch, AmazonEBS, Amazon CloudFront, VPC, DynamoDB, Lambda and Redshift)
* Skilled in using Appium and Selenium for automated testing of web and mobile
* applications, ensuring high-quality releases.
* Experience in integrating AI and machine learning algorithms into embedded systems for real-time data processing and decision-making.
* Proficient in leveraging Hugging Face’s Transformers library for developing and
* fine-tuning NLP models, including ChatGPT 3 and anticipated 4.
* Knowledgeable in implementing and optimizing vector databases for efficient storage and retrieval of high-dimensional data.
* Experience in developing web applications and implementing Model View Control
* (MVC) architecture using server-side applications Django and Flask.
* Good experience with programming languages React JS and Shell Scripting
* Strong experience working with large datasets and designing highly scalable and optimized data modeling and data integration pipelines.
* Working knowledge of Kubernetes to deploy scale, load balance, and manage Docker
* containers.
* Good knowledge in Data Extraction, Transforming, and Loading (ETL) using various tools such as SQL Server Integration Services (SSIS) and Data Transformation Services (DTS).
* Experience in Database Design and development with Business Intelligence using SQL Server Integration Services (SSIS), SQL Server Analysis Services (SSAS), OLAP Cubes, and Star Schema.
* Expertise in designing data-intensive applications using Hadoop Ecosystem, Big Data Analytical, Cloud Data Engineering, Data Warehouse, Data Visualization, Reporting, and Data Quality solutions.
* Committed to staying updated with the latest advancements in AI, ML, and emerging technologies.

**TECHNICAL SKILLS**

* **Operating Systems:** Microsoft Windows, macOS, Linux and Ubuntu
* **Languages:** Python,React JS, Java, JavaScript, C, C++
* **Python Libraries:** PyQt, NLTK, NumPy, Scapy, SQL Alchemy Python Frameworks : Pandas, AngularJS, Flask, Django
* **Python IDE:** Sublime Text 3, VS Code, Jupyter Notebook, PyCharm
* **LLM MODELS:** ChatGPT4,
* **OPEN LLM:** OLLAMA, ChatGPT, Mistral,Stable, Difusion,Dall-E,Gemma,
* **Gen AI Frameworks:** Lang Chain, Hugging Face, RAG pipeline
* **Data Science Tool:** STATISTICAL, Big Data, Python, Tensorflow
* **Development Tools:** AWS, Docker, Selenium, Sublime Text, Eclipse, Notepad++, Open Grok,Jenkins, Coverity, Pylint,
* **Databases:** RDBMS (Oracle, SQL Server, MySQL), No SQL (MongoDB), HDFS Cassandra, PostgreSQL, SQLite, AWS, AWS Redshift, ASTDB
* **Design Tools:** Apache Maven, Ansible, JIRA, GNU, Debugger Bugzilla
* **Web Technologies:** Django, Flask, Pyramid, AJAX, HTML5, CSS3, X Path, JavaScript

**EDUCATION:**

* Master's Degree, Computer Science from Auburn University at Montgomery logo Aug 2022 - Dec 2023.
* Bachelor's Degree, Computer Science from Sreyas Institute of Engineering & Technology Jun 2017 - Feb 2021.

**PROFESSIONAL EXPERIENCE:**

**Client: TestGrid, Alpharetta, GA Aug 2023 – Oct 2024**

**Role: Gen AI Developer**

**Project: CoTester, Chatbot & VoiceAgent**

**Project Description:** TestGrid CoTester is the world's first AI-powered solution for software testing. It leverages advanced AI algorithms to automate and enhance the testing process, making it more efficient and accurate. CoTester supports a wide range of testing needs, including functional, regression, performance, and security testing across web, mobile, and API platforms. With features like intelligent test generation, automated bug detection, and real-time analytics, CoTester streamlines the testing lifecycle, reduces manual effort, and improves overall software quality. Developed an AI-driven voice agent and chatbot for TestGrid that integrates OpenAI’s GPT-4 Turbo and Whisper for real-time query responses and product navigation. FAISS was utilized to create an optimized vector store, ensuring fast and accurate data retrieval. The voice agent allows users to ask questions about TestGrid’s features and receive answers in both voice and text formats, automating navigation to specific product pages such as the ‘Real Device Cloud.’ This solution significantly enhances user experience and operational efficiency.

**Responsibilities:**

* Extracted and analyzed relevant pages and data to form the basis for automated testing within the TestGrid CoTester platform
* Integrated CoTester with Continuous Integration/Continuous Deployment pipelines to enable seamless automated Testing
* Developed comprehensive test cases from the extracted data, ensuring thorough coverage of all functionality
* Led the integration of AI algorithms to automate and enhance the software testing process, reducing manual effort and increasing test accuracy.
* Integrated CoTester with Continuous Integration/Continuous Deployment pipelines to enable seamless automated testing.
* Provided technical support and training to internal teams and customers, ensuring effective use of
* CoTester.
* Developed User Interface using Next JS.
* Develop AI fine tuning engine to process user inquiries using own LLM and Hugging face datasets.
* Processed 30 million PDF literature documents and created 2 Billion embedding into Pinecone.
* Built Angular Interface for search inquiries.
* Created comprehensive documentation for test processes, AI algorithms, and user guides
* Utilized Rust for the fine tuning process for its own LLM.
* Developed Co Researcher AI agent using AI models to automate answering questions.
* Designed and Developed an AI-powered voice agent and chatbot using OpenAI’s GPT-4 Turbo, Whisper, and FAISS for enhanced query resolution and product navigation.
* Integrated ChatGPT-4 Turbo for natural language processing, enabling the voice agent to provide real- time conversational responses to user queries.
* Implemented OpenAI Whisper to convert speech to text, enhancing the voice agent’s ability to accurately interpret user input
* Utilized FAISS for Vector Store to optimize the retrieval of relevant information and improve response times within the voice agent
* Delivered Solutions for TestGrid users, allowing seamless interaction with the product through both
* voice and text commands, providing directions for product usage and answering general queries.
* Implemented and managed vector databases to efficiently store and retrieve high-dimensional data for machine learning applications.
* Conducted performance benchmarking and fine-tuning of vector databases to meet application- specific requirements.
* Developed API for Q&A using Open AI GPT4 engine.
* Implemented Front End components using React and Turbo streams.
* Implemented robust back-end solutions utilizing Core Java and multithreading.

**Generative AI Projects:**

**1. Chatbot:**

* Designed and implemented a chatbot using LangChain and Streamlit to interact with users via an intuitive web interface.
* Integrated OpenAI’s GPT models by utilizing the OpenAI API to call ChatGPT, enabling the bot to generate contextually relevant responses.
* Ensured seamless user interactions through the chatbot by effectively managing API calls and handling user inputs dynamically
* Deployed the chatbot on the web, allowing for real-time communication and improved user engagement.
* Utilized Ollama to run the chatbot locally, ensuring efficient and secure processing of user inputs without relying solely on cloud services
* Retrieval-Augmented Generation (RAG), was implemented to create a hybrid search system

**2. VoiceBot:**

* Developed and implemented a voicebot that processes and responds to spoken language, enhancing user interaction through voice commands.
* Sourced data from Wikipedia to provide accurate and comprehensive responses to user queries.
* Integrated speech recognition technology to convert voice inputs into text, enabling effective processing of user commands.
* Applied natural language processing (NLP) techniques to interpret and generate relevant responses based on voice inputs.
* Optimized voicebot performance for clarity and efficiency, ensuring reliable and accurate interactions in various environments.
* Deployed the voicebot on [specify platform or device, if applicable], delivering a seamless and engaging user experience.

**Tools & Technologies:** LangChain, Streamlit, OpenAI API, Ollama ,Python, Speech Recognition APIs, NLP frameworks, RAG.

**Environment: Languages & Frameworks:** Python, Streamlit, FAISS, OpenAI GPT-4 Turbo, Whisper

**Libraries & Tools:** OpenAI API, FAISS (for vector store), Whisper (for voice-to-text), Streamlit (for user interface)

**Hardware:** Mac Studio server (for local deployment)

**Platforms:** TestGrid platform, FAISS for fast retrieval, Whisper for audio processing

**Operating System:** macOS

**Deployment:** Local deployment on Mac Studio without internet connection, running models like Mistral and LLaMA 3.1 for offline operation

**Client: TestGrid, Alpharetta, GA Mar 2023 – Aug 2023**

**Role: Testing Engineer & Infrastructure Engineer**

**Responsibilities:**

* Designed and implemented automated test scripts using Selenium and Python to enhance the testing process, reducing manual effort and increasing efficiency.
* Provided seamless support to both internal teams and customers, ensuring effective use of the testing product.
* Conducted enterprise-level demos to showcase product capabilities and benefits, driving customer engagement and product adoption.
* Reviewed and validated test cases, ensuring accuracy and coverage of software functionalities through manual and automated testing.
* Experienced in configuring servers and maintaining testing environments to support various testing scenarios.
* Conducted in-depth research on technical issues, providing effective solutions and guiding customers through the resolution process.
* Assisted customers in understanding and utilizing the product, enhancing their overall experience and satisfaction
* Managed and maintained server infrastructure, ensuring optimal performance and minimizing downtime in a high-availability data center environment.
* Handled server installations, configurations, and upgrades, including the setup of physical and virtual servers to meet business needs.
* Monitored network performance, identifying and troubleshooting connectivity issues with servers, hubs, and other network devices to ensure smooth operations.
* Coordinated hardware maintenance and repair, including replacing faulty components and ensuring all devices were up-to-date and fully operational.
* Implemented and adhered to data center security protocols, safeguarding sensitive data and ensuring compliance with industry standards.
* Performed routine inspections and preventive maintenance on servers, hubs, and related equipment, reducing the risk of unexpected failures.
* Documented and tracked changes to network and server configurations, maintaining accurate records for future reference and audit purposes.
* Collaborated with cross-functional teams to support network infrastructure needs, including server provisioning and troubleshooting.
* Supported data center operations during migrations and expansions, ensuring seamless transitions with minimal impact on business operations.
* Provided technical support for server and network-related issues, resolving incidents quickly to maintain service continuity.

**Environment:** Appium, Selenium, Jenkins(CI/CD), Python, PyTest, Robot Framework, Sql, HTML5,BootStrap,

**Client: TestGrid, Alpharetta, GA Dec 2022 – Mar 2023**

**Role: Laboratory Assistant & Infrastructure Engineer**

**Responsibilities:**

* Managed the testing lab, ensuring the efficient operation and maintenance of lab equipment and mobile devices, including Android and iOS devices.
* Conducted thorough checks on mobile device connections using tools such as multimeters and oscilloscopes to ensure proper functionality and performance.
* Handled backend hardware technology, performing diagnostics and troubleshooting using tools like JTAG debuggers and UART interfaces to resolve issues.
* Maintained an organized lab environment, ensuring all devices and equipment, including testing stations and connectivity tools, were in optimal working condition.
* Collaborated with team members to conduct tests and document results using software such as Excel and TestRail, ensuring accuracy and reliability.
* Implemented best practices for handling and testing mobile devices with tools like ADB (Android Debug Bridge) and Xcode, contributing to the overall quality of lab operations.
* Assisted in the setup and configuration of testing environments for various mobile devices, utilizing mobile device management (MDM) solutions.
* Monitored and documented the performance of mobile devices during testing, using performance monitoring tools such as Battery Historian and Network Profiler, providing detailed reports for further analysis
* Oversaw the operations of a high-tech testing lab, managing a wide range of mobile devices and ensuring seamless connectivity and functionality across all testing environments.
* Coordinated the integration of backend hardware technology within both the testing lab and data center, ensuring compatibility and efficient performance across systems.
* Streamlined lab and data center workflows, optimizing processes for device testing, data management, and network operations to enhance overall efficiency and reduce downtime.

**Environment:** Appium, JTAG debugger, TestRail, Automation, Xcode, Mobile Device Management (MDM) solutions

**Client: Ranbaxy, Hyderabad, India Feb 2021 – Jul 2022**

**Role: Python Automation Engineer**

**Responsibilities:**

* Developed Spark application to perform Extract Transform and load using Spark RDD and Data frames.
* Created Hive external tables on top of data from HDFS and wrote ad-hoc hive queries to analyze the data based on business requirements.
* Created Oozie workflows to automate the data pipelines.
* Involved in a fully automated CI/CD pipeline process through GitHub and Jenkins.
* Used Cloudera Manager for installation and management of the Hadoop Cluster.
* Exported data from the HDFS environment into RDBMS using Sqoop for report generation and visualization purposes.
* Developed Scoop scripts to import export data from relational sources and handled incremental loading on the customer, transaction data by date.
* Wrote Spark applications for Data validation, cleansing, transformations, and custom aggregations.
* Strong problem-solving skills, able to troubleshoot and resolve technical issues with in AutoCAD projects effectively.
* Extract Transform and Load data from source systems to Azure Data Storage services services using a combination of Azure Data Factory, T-SQL, Spark SQL, and SQL Azure Data Lake Analytics. Data ingestion to one or more Azure Services - (Azure Data Lake, Azure Storage,Azure SQL, Azure DW and processing the data in Azure Databricks
* Worked on the development of PySpark Data Frames in Azure Databricks to read data from Data
* Lake or Blob storage and utilize Spark SQL context for transformation.
* Involved in creating the PySpark Dataframe in Azure Databricks to read the data from Data Lake or Blob
* Worked in designing and deploying of Hadoop cluster and different big data analytic tools, including
* Pig, Hive, Oozie, Zookeeper, Sqoop, Flume, Impala, and Cassandra with Horton work distribution.
* Utilized the Apache Hadoop environment by Cloudera. Monitoring and Debugging Spark jobs which are running on a Spark cluster using Cloudera Manager.
* Written Hive SQL queries for Ad-hoc data analysis to meet business requirements.
* C Delivered Unit test plans Involved in Unit testing and documenting

**Environment:** Python, Django, HTML, CSS, SVN, UNIX, T-SQL, Jasper, Reports, JavaScript, Eclipse,Linux, AWS, Amazon Lambda, serverless, RDS, Scripting, DynamoDB, S3, SDK, SQS, SNS,CloudWatch, Python, Shell Scripting, RESTful, Oracle and Windows

**Client: Sreyas Institute of Engineering Technology, Hyderabad, India May 2020 – Dec 2020**

**Role: Python Developer- Intern**

**Project : Bike Rental Count Predicting System**

**Project Description:** The objective of this case study is to predict the bike rental count on daily based on the environmental and seasonal settings and understand various steps and procedures in the entire data science project pipeline such as Exploratory Data Analysis, Missing Value Analysis, Outlier Analysis, Data Cleaning, Feature Selection, and Modeling using various Machine Learning Models such as Linear Regression, Support Vector Regressor, and Random Forest Regressor. We compare multiple regression models and evaluate these models using metrics such as MAPE, RMSE, etc.

**Responsibilities:**

* Developed a predictive model for daily bike rental counts using Python, leveraging advanced statistical techniques and data analysis to forecast rental demand based on environmental and seasonal factors.
* Conducted comprehensive data analysis, including Exploratory Data Analysis, Missing Value Analysis, and Outlier Analysis, to ensure the quality and reliability of the dataset.
* Implemented feature selection and data cleaning techniques, optimizing the model’s performance by refining the input features and removing noise from the dataset.
* Compared and evaluated multiple regression models using metrics like MAPE and RMSE, identifying the most accurate and efficient model for predicting bike rentals.
* Executed the end-to-end data science project pipeline, gaining hands-on experience with all phases of a data-driven project, from data preprocessing to model deployment.

**Environment:** Python IDE, Services,Windows server 2021, Oracle10g, PL/SQL, CSS, Security, HTML, JavaScript, Test-driven development (TDD), IIS 7.0, TFS

**Client: Sreyas Institute of Engineering Technology, Hyderabad, India May 2019 – Dec 2019**

**Role: Python Developer**

**Project : Commercial Parking Slot**

**Project Description:** The need of parking slots in commercial areas has gone up considerably in metros and other towns from the last few years. The situation is going to worsen when large number of cars are ready to hit the roads by the near future. This project manages the details of duration, parking fees, parking slots and type of vehicles.

**Responsibilities:**

* Developed a parking management system using Python, designed to handle the allocation of parking slots, calculation of parking fees, and management of various vehicle types.
* Implemented a system for real-time tracking of parking durations, optimizing the allocation and turnover of parking spaces in commercial areas.
* Designed a user-friendly interface for managing parking details, streamlining operations for both users and administrators to cope with the growing demand in metropolitan and urban areas.

**Environment:** Python IDE,, C, C++, SQL 2008,Notepad++