Sabareeswaran Shanmugam

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SUMMARY

Experienced Software Engineer with a focus on Machine Learning, possessing over two years of hands-on experience in Python and ML frameworks. Adept at designing, developing, and deploying ML-driven applications. Proficient in leveraging cloud services like AWS and Azure, implementing CI/CD pipelines, and managing deployments.

WORK EXPERIENCE

AT&T Atlanta, USA (Remote 100%)

Software Engineer (ML Focus) **June 2022 – Present**

- Developed Cox Regression models to predict customer calls to care centers, resulting in a 50% call volume reduction by tailoring welcome center displays based on user activity.
- Leveraged genetic algorithm with crossover and mutation techniques in Cox models, automating customer intent grouping, which boosted call reduction to 70% from the prior 50% manual approach.
- Transitioned from traditional SQL methods to fine-tuning Distil BERT using the Hugging Face -transformer and PyTorch framework for customer intent capture. This supervised learning approach generated intent IDs, leading to an 80% reduction in call volume rate.
- Developed a standalone "propensity/likelihood to call" model for the new service AIA using XGBooster classifier and SMOTE up sampling, resulting in an 80% call reduction. Additionally, created a propensity to buy model using SGD, leading to the sale of 15,000 accessories within two months.
- Oversaw the platform's cloud shift from on-prem IBM servers to Azure VMs using AKS for deployment, reducing costs from $100,000 to $60,000 yearly. Refactored Python scripts from 3.5 to 3.11, updated base image Ubuntu 22.04, and resolved Veracode CWE issues.

Cleveland State University Cleveland, USA

Graduate Assistant **January 2022 – October 2022**

- Designed and developed a BERT-based chatbot system, enhancing user interaction by 80% on the university portal, and utilized NLP techniques like Tokenization, Named Entity Recognition, and Word Embeddings to handle over 2000 daily queries with a 93% accuracy.
- Employed Topic Modeling using Latent Dirichlet Allocation (LDA) for effective user query categorization. Seamlessly integrated the chatbot with Docker and Kubernetes, ensuring robust scalability during high traffic periods.

Merkle Company (Ugam Solutions) Bangalore, India

Data Science & Machine Learning Analyst -Intern **January 2020 - May 2020**

- Leveraged Long Short-Term Memory (LSTM) networks to predict electronic market trends, leading to a 5% boost in annual profit.
- Improved the streamlined data collection by accommodating more than 1000 columns without error-free method subsystems of elastic search-opensource which reduced AWS costs to one-third.

TECHNICAL SKILLS

- **Programming Languages:** Python, SQL, HTML, CSS, JavaScript, C, C++
- **Cloud Technologies:** Azure ML, AWS EC2, AWS Lambda, AWS S3, Databricks, Snowflake and Palantir Foundry
- **DevOps:** Docker, Azure Kubernetes Service (AKS), Jenkins, CI/CD, Git
- **ML Frameworks:** Numpy, Pandas, Scikit-learn, OpenCV, TensorFlow, PyTorch, Hugging Face's Transformers, Spacy & NLTK
- **Databases:** SQL Databases, PostgreSQL, Redis, MongoDb (NoSQL), HBase, Cassandra, Azure Data Explorer
- **Created Python package:** montocarlo-ol-circlearea ,which calculates Area of overlapped circles region using MontoCarlo method.
- **Expertise Areas:** AI, data science, Machine Learning, Computer Vision and Cloud computing

PROJECTS

XickleAI – Finetuned Falcon-7b Q&A Bot |LLM |PyTorch | LangChain | custom dataset Scraped-Llama2 | Code **October 2023 – Present**

- XickleAI is LLM designed to assist individuals with sickle cell disease (SCD) by providing reliable information, guidance, and support.

Topic Based YouTube Recommendation System | Front-End- Python -Flask |custom dataset Scraped-Selenium| Code **April 2022 – May 2022**

- Realtime YouTube data Scrap, Analysis, classify using ML Algorithm, build a randomized Recommendation system using kmeans.

Realtime Twitter Sentimental Analysis -Russia Ukraine war | Python-NLTK | NLP| Code **February 2022 – April 2022**

- Scraped Realtime data of 10K tweets from twitter API, stored semi-structured data in MongoDb and processed sentimental Analysis.

Denoising AutoEncoder Using LeNet | Python |PyTorch |MNIST dataset | Code **July 2021 – September 2021**

- Implemented a multi-task learning with deep-CNN(LeNet), where network denoise the input digital image and classifies its output.

COVID-19 Detector GUI Based Cross Platform Application Software| Python | Front-End-PyQt5 |Code **January 2021 – April 2021**

- Collaborated with Professors from Washkewicz college of engineering, implemented ML pipeline with ResNet50 and InceptionV3 for COVID-19 diagnosis and could accurately crop CT Xray images of lungs areas, predict COVID-19 severity scores, train over multi-CNN.
- Analyzed feedback from 10+ doctors across India and converted the GUI into WEB based application with Google cloud and Firebase.

EDUCATION

Cleveland State University Cleveland, USA

Master of Science in Computer Science (CGPA: 3.65/4.0) **Jan 2021- Dec 2022**

PSG College of Technology, Anna University Coimbatore, India

Bachelor of Technology in Information Technology (CGPA: 8.56/10.00) **August 2015 - May 2019**