# SEENA ELIZEBETH MATHEW

Data Scientist | Gen-AI| Machine Learning |

## CONTACT


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## PROFILE SUMMARY

Generative AI and Machine Learning professional with 3.5+ years of IT experience and 6 years of research expertise in AI-driven solutions for business and research applications. Specialized in analyzing complex datasets and designing scalable ML models to develop AI-powered solutions for real-world problem-solving. Skilled in advanced machine learning techniques and data-driven methodologies. Currently pursuing a Ph.D. in Machine Learning with a focus on threat detection systems. Passionate about leveraging AI for cutting-edge innovations and security applications

## SKILLS

- **Programming Languages:** Python, C, Embedded C, C++.
- **Frameworks and Development:** GrapgQL, Streamlit, Flask
- **Cloud platform:** AWS S3 bucket, AWS bedrock, Amazon opensearch, AWS Glue, AWS Cloudwatch, AWS Lambda,
- **Machine Learning & AI:** Linear Regression, Logistic Regression, Decision Trees, Random Forest, XGBoost,SVM, K-Means Clustering, PCA, TensorFlow, PyTorch, Neural Networks, GPT Models, BERT, Transformers

## PROJECTS

**1) Generative AI: Generative AI-Powered Vehicle Recommendation System**

**Description:** Developed a scalable, AI-driven vehicle recommendation system leveraging Generative AI and AWS cloud services to provide personalized vehicle suggestions based on user preferences and natural language queries. The system utilized AWS Bedrock for generating embeddings from user inputs, Amazon OpenSearch for storing and retrieving semantic vector data, and AWS Glue for data preparation, orchestration, and execution of the data pipeline.

**Roles & Responsibilities:**

- Designed and developed an end-to-end recommendation engine pipeline using AWS-native services.
- Implemented embedding generation using Amazon Bedrock's foundation models to convert user inputs into dense vector representations.
- Integrated Amazon OpenSearch with vector search capabilities to store vehicle data embeddings and retrieve similar matches based on cosine similarity.
- Automated data workflows using AWS Glue to clean, transform, and load structured/unstructured vehicle and user data into OpenSearch.
- Fine-tuned the relevance of recommendation outputs by fine tuning and better vector search configurations.
- Ensured high scalability and performance by designing serverless and distributed architectures on AWS.
- Collaborated with data scientists and product teams to align recommendation logic with business goals and user intent.
- Implemented logging and monitoring using Amazon CloudWatch to track system performance and debugging.

**Skills:** Generative AI, NLP, AWS-Services, Python

## SKILLS

- **NLP:** Tokenization, Named Entity Recognition (NER), Sentiment Analysis, Text Summarization
- **Computer Vision:** OpenCV, YOLOv5, YOLOv8, Object Detection, Image Classification, Video Stream Analysis
- **Data Visualization:** Power BI, Matplotlib, Seaborn, Ploty
- **Databases:** Vector DB, MySQL.
- **Tools & Platforms:** Git, Docker, Kubernetes, Jenkins, GitHub Actions
- **Statistical Analysis:** Hypothesis Testing, A/B Testing, Statistical Inference
- **Automation:** Beautiful Soup, Selenium, Requests

## CERTIFICATION

- PG Diploma in Machine Learning & Generative AI, **IIT Kanpur**

## ACHIEVMENTS

- SPOT Award: Continental Automotive Components India Pvt Ltd.
- Best Paper Award, 3rd International Conference on Big Data and Cloud Computing.
- Best Paper Award, 3rd International Conference on Global Innovations in Technology.
- Rank Holder, M.Tech Degree Examination

**2) Generative AI: Automated Document Analysis (DocsGPT)**

**Description:** Designed and implemented AI solutions for document processing and embedding-based searches. The project leveraged advanced NLP techniques to extract insights from large-scale documents, enhancing automated document analysis capabilities.

**Roles & Responsibilities:**

- Developed scalable embedding vector databases for high-dimensional data.
- Integrated ChatGPT to provide AI-driven document insights and recommendations.
- Optimized search functionalities using embedding-based retrieval techniques.
- Contributed to open-source projects to enhance document analysis tools.
- Improved document classification accuracy through fine-tuned AI models.

**Skills:** Python, NLP, Generative AI, ChatGPT, Embedding Vector Databases, OpenAI API, Document Processing

**3) Retail : Customer Churn Prediction for Subscription-Based Retail**

**Description:** Developed a predictive model to identify customers likely to churn from a subscription-based retail service. The project focused on customer behavior analysis to improve retention strategies.

**Roles & Responsibilities:**

- Preprocessed customer data, including purchase frequency, order value, and interactions.
- Designed and trained classification models using Logistic Regression and Gradient Boosting.
- Built dashboards for visualizing churn patterns and actionable insights.
- Provided data-driven recommendations to the marketing team for retention strategies.
- Conducted model evaluation and performance tuning to maximize prediction accuracy

**Skills:** Customer Analytics, Logistic Regression, Gradient Boosting, Data Visualization, Python, Predictive Modeling

**4) Computer Vision: Wound Boundary Detection in Medical Images (YOLOv8)**

**Description:** Developed a computer vision model using YOLOv8 to detect wound boundaries in medical images. The project aimedto assist healthcare professionals in wound assessment and monitoring

**Roles & Responsibilities:**

- Preprocessed medical image datasets, including resizing, annotation, and augmentation.
- Designed and implemented a YOLOv8 model for accurate wound boundary detection.
- Fine-tuned hyperparameters to improve model precision and recall.
- Built dashboards for visualizing detected wound boundaries and model insights.
- Provided actionable insights to healthcare professionals for wound assessment.

**Skills:** Computer Vision, Deep Learning, YOLOv8, Image Processing, Python, TensorFlow, OpenC

## EDUCATION

2024- Ongoing
PRESIDENCY UNIVERSITY
PhD.(CSE)

2011-2013
MAHATHMA GANDHI UNIVERSITY
MTECH (CSE)
Percentage -86% (Rank Holder)

2007- 2011
KERALA UNIVERSITY
B TECH (CSE)
Percentage -75.9%

## WORK EXPERIENCE

**EXL PVT Limited** **2025 - PRESENT**

- led the development of a scalable, AI-driven vehicle recommendation system using Generative AI and AWS Bedrock to process natural language queries and generate user-specific embeddings.
- Integrated Amazon OpenSearch for storing and retrieving semantic vector data, enabling high-accuracy, real-time vehicle suggestions through vector similarity search.
- Built and orchestrated data pipelines with AWS Glue for automated data preparation, transformation, and ingestion from multiple vehicle and user data sources.

**Tech Lead, L&T Technology Services (LTTS)** **2021 - 2025**

- Led the development of customer-centric solutions using machine learning models for automotive applications.
- Designed scalable vector databases for embedding and retrieval systems.
- Developed predictive models for HMI systems, achieving compliance with ASPICE standards.

**Research Role** **2013 - 2021**

- Conducted extensive research in botnet detection using machine learning based solutions, securing multiple publications in Scopus-indexed journals.

## INTERNATIONAL JOURNALPUBLICATIONS

- “Detection and Blocking of Botnet in the Onion Routing Network", International Journal of Advanced Science andTechnology (Scopus Indexed)."
- “Classification of DGA Botnet Detection Techniques Based on DNS Traffic and Parallel Detection Technique forDGA Botnet", Advances in Intelligent Systems and Computing, Springer
- “Classification of DGA Botnet and Domain Generation Algorithm", International Journal of Scientific Research andReview.
- "HTTP Botnet Defense Mechanism using System Dynamics-based Genetic Algorithm", Indian Journal of Scienceand Technology.
- "Genetic Algorithm-Based Layered Detection and Defense of HTTP Botnet", ACEEE International Journal onNetwork Security.
- "Automated Layered HTTP Botnet Defense Mechanism", International Journal of Scientific and EngineeringResearch.SPOT Award: Continental Automotive Components India Pvt Ltd.