

RATHOD RAJ (He/His)

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PROFESSIONAL SUMMARY

AI and Machine Learning Engineer specializing in Python, Deep Learning, Natural Language Processing (NLP), and Retrieval-Augmented Generation (RAG). Hands-on experience developing Bidirectional GRU (BiGRU) sequence architectures with TensorFlow/Keras, learned word embeddings, and vector database indexing in ChromaDB with LangChain. Successfully built and deployed end-to-end AI applications on Render and Streamlit Cloud featuring sub-second neural inference, automated PKL model serialization, and over 92% prediction accuracy.

TECHNICAL SKILLS

Core Languages: Python, SQL, Java

Machine Learning & AI: Supervised Learning, Classification, Regression, Deep Learning, Bidirectional GRU (BiGRU), Recurrent Neural Networks (RNN), Retrieval-Augmented Generation (RAG), Large Language Models (LLMs), Prompt Engineering, Feature Engineering, Model Evaluation (Accuracy, Precision, Recall, F1)

Data Science & Analytics: Pandas, NumPy, Exploratory Data Analysis (EDA), Data Cleaning, Feature Scaling, Outlier Detection, Matplotlib, Seaborn

Frameworks & Libraries: TensorFlow, Keras, Scikit-learn, LangChain, Streamlit, OpenCV, PKL (Pickle)

Databases & Vector Stores: ChromaDB, PostgreSQL, Vector Embeddings & Similarity Indexing

Tools & Deployment: Git, GitHub, Model Deployment, VS Code, Jupyter Notebook, Google Colab, Render, Netlify, Streamlit Cloud

TRAINING

Sheryians Coding School

Data Science and Generative AI Trainee

Online

Jan 2026 – Present

- Queried and analyzed 10+ relational datasets using SQL, Python, Pandas, and NumPy for structured data cleaning, transformation, and feature extraction.
- Performed end-to-end Exploratory Data Analysis (EDA) on structured datasets, identifying correlations, scaling features, and visualizing distributions with Matplotlib and Seaborn.
- Built, tuned, and evaluated 8+ Machine Learning and Deep Learning models for regression and classification using Scikit-learn and TensorFlow, achieving up to 94% validation accuracy.
- Implemented Retrieval-Augmented Generation (RAG) pipelines with LangChain and tested prompt engineering techniques to ground LLM inference with dynamic document context.
- Serialized trained models, scalars, and vectorizers into PKL files, reducing deployment model load times to under 150ms.

PROJECTS

SENTI.AI — BiGRU Deep Learning Emotion Detection System

[GitHub](#) | [Live Demo](#)

Python, TensorFlow, Keras, BiGRU Neural Network, Word Embeddings, Tokenizer, NLP, Render

Solo Project

- Designed and trained a Deep Learning sequence classification model using a Bidirectional Gated Recurrent Unit (BiGRU) neural network in TensorFlow/Keras to classify 6 emotional states (Joy, Sadness, Love, Anger, Fear, Surprise).
- Constructed an NLP preprocessing pipeline implementing regex cleaning, lowercasing, vocabulary indexing with Keras Tokenizer, and sequence post-padding (maxlen=50) to generate dense tensor inputs.
- Incorporated learned word embedding layers coupled with Spatial Dropout regularization to preserve bidirectional sequential context and prevent overfitting on text patterns.
- Configured a dense output layer with Softmax activation to output fine-grained probability distributions across all 6 target emotion classes with real-time confidence scores.
- Deployed the trained neural network model on Render with an automated keep-alive heartbeat engine to eliminate cold starts, integrating voice input and dynamic UI emotion theming.

ChatNotes AI — Multi-Format RAG Document Assistant

[GitHub](#) | [Live Demo](#)

Python, LangChain, ChromaDB, Groq Cloud API, Llama 3.1, Vector Embeddings, PKL, Render

Solo Project

- Built an end-to-end Retrieval-Augmented Generation (RAG) assistant allowing users to upload PDF, TXT, and Markdown documents to query content with precise page source citations.
- Implemented recursive text chunking and stored vector embeddings in ChromaDB using LangChain, enabling document persistence across sessions and reducing re-embedding overhead by 45%.
- Connected Groq Cloud API running Llama 3.1 (8B) to generate responses in under 1.8 seconds, streaming answers token-by-token using Server-Sent Events (SSE).
- Serialized document indexing states and chat session metadata into PKL files for rapid startup and deployed the application on Render.

PROJECTS (CONTINUED)

TruthLens — AI Fake News Detection Platform

[GitHub](#) | [Live Demo](#)

Python, Scikit-learn, Passive-Aggressive Classifier, TF-IDF Vectorizer, NLP, PKL

College Group Project

- Collaborated in a college group project to build an AI platform that analyzes news text to determine whether an article is Real or Fake using NLP and Machine Learning.
- Preprocessed text data using tokenization, stop-word removal, and TF-IDF vectorization, training a Passive-Aggressive Classifier that scored 92.4% test accuracy across 4,000+ test samples.
- Serialized and loaded the trained classifier and TF-IDF vectorizer using PKL files to enable lightweight, instant model inference under 50ms without reloading datasets.
- Built an intuitive user interface that displays real-time prediction verdicts, probability confidence scores, and key suspicious word highlights.
- Tested the model on diverse news categories (politics, science, world news) to ensure balanced performance and reduce false positive classifications.

CinemaVerse — Movie & TV Series Recommendation Engine

[GitHub](#) | [Live Demo](#)

Python, Scikit-learn, TF-IDF, Cosine Similarity, TMDb API, NLP, PKL, Streamlit

Solo Project

- Developed a content-based recommendation engine that searches and suggests similar titles from a massive catalog of 300,000+ movies and TV series.
- Built an NLP feature pipeline combining plot overviews, genres, cast, and keywords, using TF-IDF vectorization and Cosine Similarity to calculate similarity scores in sub-seconds.
- Exported precomputed similarity matrices into compressed PKL files, reducing memory usage by 60% and enabling sub-second recommendation lookups.
- Implemented fuzzy token-matching to automatically handle user typos and spelling mistakes in the search bar across 10+ languages.
- Integrated the live TMDb API to fetch high-resolution posters, trailers, and IMDb ratings directly into a dark-themed Streamlit application.

CERTIFICATIONS

Data Science & Analytics with GenAI — Sheryians Coding School

[View Certificate](#)

Practical curriculum covering Python, SQL, EDA, Machine Learning, Deep Learning, and Generative AI

July 2026

Computer Networks and Internet Protocol — NPTEL (IIT Kharagpur)

[View Certificate](#)

Study of computer network layers, TCP/IP protocol suite, routing algorithms, and network architecture

IIT Kharagpur

Python Programming — Sololearn

[View Certificate](#)

Object-oriented programming, data structures, algorithms, and practical Python scripting

Sololearn

Java Programming — Sololearn

[View Certificate](#)

Core Java programming, object-oriented design, exception handling, and collections

Sololearn

Prompt Engineering — Sololearn

[View Certificate](#)

LLM prompt design, context optimization, zero/few-shot prompting, and model outputs

Sololearn

EDUCATION

Parul University

Vadodara, Gujarat

Bachelor of Technology in Computer Science and Engineering (Specialization in AI)

2023 – 2027

Cumulative Grade Point Average (CGPA): 7.66 / 10.0

Vadodara, Gujarat

Shri Rajshakha School

Porbandar, Gujarat

Higher Secondary Certificate (HSC) – Science Stream (GSEB) — Score: 60.61%

2022 – 2023

Sigma School

Porbandar, Gujarat

Secondary School Certificate (SSC) (GSEB) — Score: 79.81%

2020 – 2021