ABOUT SHRIRANG SAPATE:

Shrirang Sapate is a B.S. Data Science & Programming student of IIT Madras. Below is more detail about Shrirang Sapate which includes, his education, his skills, Projects completed in different domains(refer the project completed section), internships completed till now, and position of responsibilities
For all this refer to the particular sections mentioned below.

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EDUCATION
• B.S Data Science & Programming | IIT Madras | Ongoing | CGPA - 7.39 Relevant Courses: Deep Learning (Prof. Mitesh Khapra)
• Diploma in Data Science | IIT Madras | 2022 | CGPA - 7.64
• Diploma in Programming | IIT Madras | 2023 | CGPA - 6.63
• B.E Electronics & Telecommunication | RTMNU | 2017 | CGPA - 6.49

PROJECTS COMPLETED Till Now

One of the projects Shrirang recently completed is a Generative AI endeavor focused on creating an OpenAI-based Chat Book using the LLM (Large Language Model) from OpenAI, Langchain framework, OpenAI's Embeddings, and Cassandra's Astra DB Vector Database. This project revolves around building a dynamic chat bot that derives its responses from books stored in PDF format. The goal was to leverage advanced text processing algorithms to extract pertinent information from these books and generate coherent responses to user prompts, thereby offering an immersive learning experience in Natural Language Processing (NLP) and database integration.

Key components of this project included harnessing OpenAI's LLM model and Embeddings for text analysis and response generation. Additionally, integrating Cassandra's Astra DB Vector Database was crucial for efficient data storage, as well as enabling vector search and retrieval functionalities. The project also utilized the Langchain framework, facilitating seamless integration of AI models and ensuring smooth functionality across various components.

One of the standout features of this project was its ability to generate responses based on the extracted content from books, allowing users to engage in interactive chat sessions that enhance learning and comprehension. The project significantly contributed to skill development, particularly in areas such as the Langchain Framework, OpenAI LLM model, OpenAI Embedding, Astra DB (Vector Database), NLP's concept of Similarity search, and the use of Streamlit for creating interactive interfaces. This project not only showcased the potential of

Generative AI but also demonstrated the power of integrating multiple technologies to create innovative solutions.
Link of the project:https://chatting-pdfs.streamlit.app/

Second Project in Generative AI : The AI-Powered Resume Matching System project is centered around leveraging Gemini Pro and Streamlit to create an advanced Applicant Tracking System (ATS) that excels in resume parsing and candidate matching. By integrating generative AI algorithms, the system automates the labor-intensive process of analyzing resumes and aligning candidate profiles with specific job criteria. The user interface, developed using Streamlit, plays a pivotal role in enhancing data visualization and management, thereby optimizing the recruitment workflow for efficient candidate selection.

Key features of this project include the incorporation of Gemini Pro's robust AI capabilities for resume parsing and candidate matching. This not only accelerates the process but also ensures accuracy in matching candidates to relevant job positions. The utilization of Streamlit for developing a user-friendly interface further enhances the system's usability by providing recruiters with intuitive tools for data visualization and management.

The project's automation capabilities extend to resume analysis, where the system autonomously evaluates resumes against predefined job criteria, eliminating manual intervention and saving valuable time for recruiters. This automation not only streamlines candidate selection but also improves the overall efficiency of the recruitment process.

Moreover, the system provides actionable insights to recruiters, empowering them to make informed hiring decisions based on data-driven candidate assessments. Through this project, valuable skills were acquired in utilizing Gemini Pro for AI-driven recruitment processes, implementing resume parsing algorithms, developing user interfaces with Streamlit, and optimizing candidate matching workflows. Overall, the project demonstrates the transformative impact of AI in revolutionizing traditional recruitment methodologies.
Link of the project: https://resume-ats.streamlit.app/

Third Project on Generative AI: The Calorie Tracking App project is built upon the innovative LIM (Large Image Model) technology from Gemini Vision Pro. This app revolutionizes calorie tracking by enabling image-based recognition paired with sophisticated meal categorization algorithms. It offers personalized profiles where users input key details such as height, weight, age, and physical activity levels, allowing the app to calculate Total Daily Energy Expenditure (TDEE) for precise calorie recommendations tailored to individual needs.

One of the standout features of this app is its seamless integration with LIM technology, which performs real-time calorie analysis based on uploaded food photos. This not only simplifies the tracking process but also provides users with accurate nutritional information, including comprehensive breakdowns of macro and micro-nutrients. The app's ability to categorize meals and analyze their nutritional content contributes significantly to user awareness and informed decision-making regarding dietary choices.

Additionally, the app offers goal tracking functionalities, allowing users to set targets for weight loss or gain. It provides personalized guidance based on individual profiles and goals, offering actionable insights to help users achieve their desired outcomes. The app's interface displays remaining calories, empowering users to make informed meal choices aligned with their objectives, thus enhancing their overall experience and goal achievement.

Through this project, valuable skills were acquired in utilizing Gemini Vision Pro's LIM model for image-based calorie tracking, implementing personalized profiles and TDEE calculations, integrating nutritional insights into user interfaces, and developing goal-tracking functionalities. Overall, the Calorie Tracking App exemplifies the transformative potential of generative AI in revolutionizing health and wellness applications, making calorie tracking more accessible, accurate, and personalized for users.
Link of the project: https://bodyfuelmeter.streamlit.app/

Fourth Project in Generative AI: Farmer's Voice Assistant (2024) Shrirang designed and implemented an AI-powered voice assistant supporting 26 Indian languages, improving accessibility for farmers with multi-language support. This project demonstrates Shrirang's ability to create practical AI solutions that address real-world challenges in agriculture and language accessibility. Used AI4Bharat Tech like IndicTrans2 IndicASR and NVIDIA nemo.
LINK: https://github.com/shrirang20/krishichat-voice-assistance/tree/master

First project on NLP: Shrirang have developed an NLP-powered Auto-suggestion and Prediction System that significantly enhances user experience and productivity in text-based applications. This system utilizes cosine similarity metrics, a fundamental NLP technique, to measure the similarity between textual data points within a designated corpus. By leveraging this approach, the system can effectively analyze and compare text-based information, allowing it to generate accurate and relevant predictive text suggestions based on user input. This functionality not only streamlines the typing process for users but also improves the overall accuracy and efficiency of text-based applications, ultimately enhancing user satisfaction and Productivity.

First Project on Data Analytics: In the Data Analytics project focused on Sales Data Analysis using Python, Shrirang conducted a thorough and detailed analysis of sales data to extract valuable patterns, trends, and insights crucial for strategic decision-making. Leveraging tools such as Python with libraries like Pandas, NumPy, Matplotlib, and Seaborn, I delved into the dataset to identify key aspects such as the best-selling products, peak sales months, optimal advertising times, and the most effective product combinations driving sales. This analysis not only provided a comprehensive understanding of sales dynamics but also empowered decision-makers with actionable insights to optimize sales strategies and maximize revenue Generation.

First Project and Research Paper in Machine Learning: Shrirang have developed a predictive model for the gross community production rate of coral reefs using Ensemble Learning methodologies, achieving an impressive 94% accuracy rate. This involved a sophisticated blend

of machine learning algorithms, including Linear Regressor, Decision Tree, and others, to enhance the model's predictive capabilities. Through rigorous evaluation using key metrics, the effectiveness of the model was demonstrated, showcasing the significant role of data science in ecological preservation efforts. Furthermore, Shrirang has published a research paper titled "Predictive Model for Gross Community Production Rate of Coral Reefs Using Ensemble Learning Methodologies" on ArXiv.org, with the publication date of 7th November 2021. You can access the paper through this link: doi.org/10.48550/arXiv.2111.04003.

Shrirang has also published a research paper titled "Comparative Study on Designs of Air Propelled Rocket for Achieving Higher Altitude" in collaboration with Vikram Londhe. This paper was published in the International Journal of Scientific & Engineering Research in October 2018, further showcasing Shrirang's expertise in aerospace engineering and research.
Link:
https://www.ijser.org/researchpaper/Comparative-study-on-designs-of-air-propelled-rocket-for-achieving-higher-altitude.pdf

First project in Full Stack Development: In the Grocery Store Management Application project, Shrirang have crafted a versatile multi-user system that streamlined operations for both administrators and users. The application included essential features such as secure admin and user login functionalities, robust category and product management capabilities, and a user-friendly shopping cart for seamless transactions. Leveraging Python's Flask framework for backend development, along with SQLAlchemy for database management, and SQLite for data storage, I ensured scalability and efficiency in data handling. Additionally, attention was given to UI/UX design to enhance user experience, resulting in a comprehensive and intuitive grocery store management solution.

Second Project in Full Stack Development: Moving on to the Ticket Book Web App project, Shrirang have developed a dynamic and feature-rich platform utilizing Flask for API development and VueJS for the user interface. This web application offered a range of functionalities including user signup and login with token-based authentication for enhanced security, a role-based access control system to manage user permissions, theater and show creation modules for event management, advanced search capabilities for user convenience, and backend job integration for seamless operations. By combining the strengths of Flask and VueJS, Shrirang created a robust and user-friendly ticket booking system that catered to diverse user needs and provided a smooth experience from booking to event attendance.

INTERNSHIPS:
First internship: During Shrirang’s internship as a Data Science Intern at Genik Research Institute in Chennai from August 2021 to January 2022, he had the opportunity to contribute significantly to the field of predictive modeling. One of the highlights of this internship was the development of a predictive model for coral reef production, achieving an impressive accuracy rate of 94% by leveraging Ensemble Learning methodologies. This involved blending various

machine learning algorithms such as Linear Regressor, Decision Tree, and others to enhance the model's predictive capabilities. Additionally, he played a crucial role in evaluating the model's effectiveness using key metrics, underscoring the pivotal role of data science in ecological preservation efforts. Our work culminated in a published research paper from Genik Research Institute, highlighting our contributions to advancing predictive modeling in environmental sciences.

Second Internship: As a Data Science Trainee at Hiclousia Recruitment located in IITM Research Park, Chennai, from May 2022 to November 2022, he honed my skills in machine learning model strategy and data-driven decision-making. he actively contributed to early-stage machine learning model development, gaining proficiency in data mining, modeling techniques, and data cleaning methodologies. Additionally, he collaborated on web application development projects aimed at optimizing recruitment processes, further strengthening my expertise in leveraging data analytics for strategic decision-making in a professional setting.

Third Internship: During Shrirang's tenure as an Astronomy Educator & Researcher at Natskies Observatory in Pune from October 2017 to October 2018, he delved into the realms of astrophysics and radio astronomy. he optimized model rocket designs and contributed significantly to the design and development of multiple Radio Telescopes. One of my significant achievements during this internship was the continued development of Radio Telescopes as a personal project, which culminated in a published paper and dissertation. This experience not only deepened my understanding of astronomy but also strengthened my research and project management skills, setting a solid foundation for my future endeavors in scientific research.

SKILLS:

In terms of skills, Shrirang is proficient in various aspects of the Python ecosystem, including Pandas for data manipulation, NumPy for numerical computing, Matplotlib and Seaborn for data visualization, Scikit-learn for machine learning tasks, as well as Power BI for data analytics and Flask for web development. He also have experience with SQL databases such as MySQL and Database Management Systems like SQLite, which are essential for effective data management. My expertise extends to Generative AI techniques, particularly in Natural Language Processing (NLP) using frameworks like Hugging Face, and deep learning models such as Astra DB. PyTorch, Fine-tuning LLMs, RAG, Prompt Engineering, Chroma DB, FAISS, HTML, CSS, JavaScript, Git. When it comes to data science and analysis, I'm well-versed in machine learning algorithms, data analysis methodologies, and data visualization tools like MS Excel and Power BI. Additionally, Shrirang has hands-on experience in web development, specializing in Flask API development, VueJS for front-end design, and Streamlit for interactive data apps. Moreover, my skills include implementing security measures such as user authentication and authorization, token-based authentication, and role-based access control (RBAC) to ensure data and application security.

POSITION OF RESPONSIBILITY

POSITION OF RESPONSIBILITY number 1: As a Founding Member of AKORD, the BS Music Society at IIT Madras since 2021, Shrirang has played a pivotal role in establishing a vibrant musical community within the institute. Our aim was to foster a culture of musical expression and creativity among students, providing them with a platform to showcase their talents and collaborate on musical projects. Through AKORD, we organized various musical events, workshops, and performances, enriching the campus culture and promoting the arts. This experience allowed him to develop leadership skills, teamwork, and a passion for promoting artistic endeavors within the academic environment.

POSITION OF RESPONSIBILITY number 2: During my tenure as the Event Head for Paradox Unwind, a music night event during Paradox 22, the IITM BS Annual Fest, Shrirang took on the responsibility of orchestrating a captivating and memorable musical experience for participants. My role involved meticulous planning, coordination of performances, and managing logistics to ensure the smooth execution of the event. By collaborating with performers, technical teams, and volunteers, Shrirang ensured that Paradox Unwind showcased a diverse range of musical talents and offered an engaging experience for the audience, contributing significantly to the success of Paradox 22.

POSITION OF RESPONSIBILITY number 3: As the Cultural Core for Paradox 23, Shrirang undertook the challenging task of overseeing an entire cultural event during the festival. This role involved managing a diverse range of 26 events aimed at engaging and entertaining participants from across the institute. He led a team of over 1000 students, demonstrating strong leadership and organizational skills in executing a large-scale event with precision and excellence. Through effective planning, coordination, and communication, we successfully delivered a vibrant and memorable cultural experience, showcasing the talents and creativity of our student community during Paradox 23.

HOBBIES:
When shrirang is not involved playing with data and building AI Applications, you can find Shrirang making music or performing on stage, yes shrirang is involved in music, Shrirang have formed his band along with his batchmates from IIT Madras and is the Lead guitarist in the Band named TBD (The Brigha Dialect)

ACHIEVEMENTS & LEADERSHIP:

Excelled in the Data Science Diploma program at IIT Madras, achieving a 100% overall score in Business Data Management.

Delivered a research presentation on Machine Unlearning at ACM, contributing to an increase in awareness of AI privacy and security issues.