AIML Internship Task List

Internship Pre-requisites before starting your tasks:

1.LinkedIn Profile Update: Ensure that your LinkedIn profile is updated to reflect your technical skills, and update your experience section to include **"ShadowFox AIML Intern."**

2.LinkedIn Post: It's not mandatory to post the offer letter on LinkedIn, but if you wish to receive **extra swags** at the end of the internship, you can post your offer letter and **tag us** to receive assured swags.

3.GitHub Repository: You are required to create a separate GitHub repository named **"ShadowFox"** for all tasks. You can use any IDE to write your code and upload it to the respective repository.

4. Completion of Tasks: Complete the required tasks as specified in this Task List.

5. Proof of Work: At ShadowFox, we value **Proof of Work** (POW). You are required to post a video explanation of your respective tasks in LinkedIn. Screenshots must be submitted during your task submission.

After completing all the above steps, proceed with your task completion.Kindly note that all the details and screenshots you submit will be thoroughly verified.

Task Level (Beginner): (Do any 1 out of 3)

1.The task at hand is to develop a practical solution for image tagging by training a straightforward model. This model should exhibit proficiency in categorizing images into elementary classes like "cat," "dog," "car," etc., employing prominent libraries such as TensorFlow or PyTorch. The overarching objective is to harness the power of machine learning to create an effective and accessible image classification system with real-world applicability across various domains and use cases.

2.Boston House price prediction: Using the provided dataset containing features such as a number of rooms, crime rates, and other relevant factors, design and implement a regression model to accurately predict Boston house prices. Your solution should involve data preprocessing, model selection, training, and evaluation:
https://drive.google.com/drive/folders/1F6S2FMjuggMnHPCDyhR wNVrAAM_VSihcV?usp=drive_link

3.Develop an autocorrect keyboard system that anticipates the next word in a sentence by leveraging the contextual information provided by preceding words. This task involves the implementation of ngrams or recurrent neural networks to enhance predictive capabilities. The goal is to create an intuitive keyboard that improves user experience by accurately anticipating and suggesting the next word, thereby facilitating efficient and errorfree text input.

Task Level (Intermediate): (Do any 1 out of 3)

1. Store Sales and Profit Analysis using Python

Problem Statement: Analyzing the sales and profit performance of a retail store is a crucial task for businesses aiming to optimize operations, refine pricing strategies, enhance marketing efforts, and improve inventory management. This challenge requires leveraging data-driven insights to identify areas for improvement and drive revenue and growth. If you aspire to learn how to conduct a comprehensive analysis of store sales and profits, this article provides a guide. The task involves delving into the intricacies of storing data, employing Python for analysis, and deriving actionable insights for strategic decision-making.

Dataset Link:

https://drive.google.com/drive/folders/13v8yNFFFQ75RlgyyueIHZlrVX6QcRSet?usp=_sharing

2.Your task is to develop an ML model for car selling price prediction and analysis. The deployed system will provide users with an approximate selling price for their cars based on several features, including fuel type, years of service, showroom price, number of previous owners, kilometers driven, whether the seller is a dealer or an individual, and transmission type (manual/automatic).

Dataset Link:

https://drive.google.com/file/d/1yFuNVPXM5CH6g0TthYKcTGrZCCJo6n8Z/view?us p=drive_link

Task Level (Intermediate): (Do any 1 out of 3)

3.Loan Approval Prediction with Machine Learning using Python
Problem Statement: Loan Approval Prediction poses a critical challenge in the fintech sector, necessitating the application of Machine Learning to analyze credit history data and construct intelligent systems capable of making informed decisions about loan approvals. This problem involves delving into various factors such as the applicant's financial history, income, credit rating, employment status, and other pertinent attributes.

Dataset link:
https://drive.google.com/drive/folders/18nheKtzhesFv_M6DB081dc mvphQXs7st?usp= sharing

Task Level (Advanced):

1.Problem Statement: Embark on an AI-driven journey in the realm of natural language processing (NLP) and machine learning (ML) by deploying a Language Model (LM) of your choice. In this project, you are tasked with delving into the intricacies of LM technology, where the selection of the LM is entirely at your discretion. The comprehensive process involves not only implementing the chosen LM but also conducting an in-depth analysis of its performance and capabilities.

Guidelines:

1.LM Selection: Choose an LM that aligns with your interests, whether it be cutting-edge models like GPT3, BERT, or even a specialized domain-specific LM. The selection should be driven by your curiosity and the specific context in which the LM will be applied.

2.Implementation in a Jupyter Notebook: Create a Jupyter notebook from scratch to implement and showcase the chosen LM. Provide a step-by-step demonstration of the implementation process, highlighting key features, parameters, and any unique aspects of the selected LM.

Task Level (Advanced):

3.Exploration and Analysis: Conduct a thorough exploration of the LM's capabilities within the Jupyter notebook. Analyze its performance on sample text inputs, showcase its ability to understand context, and evaluate its language generation capabilities. This phase may involve experimenting with different input scenarios and documenting the LM's responses.

4.Research Questions and Objectives: Based on your exploration, define research questions that delve into the strengths and limitations of the chosen LM. Consider aspects such as contextual understanding, creativity in generating text, and adaptability to diverse domains. Tailor your research questions to extract meaningful insights from the LM's behavior.

5.Visualization of Results: Utilize visualization techniques to present the results of your LM analysis. This could involve graphical representations of the LM's responses, comparisons with baseline models, or even visualizing the attention mechanisms within the LM architecture. Visualization aids in conveying complex information in an accessible manner.

6.Project Alignment and Evaluation: Align your project with the overarching goals of advancing understanding in the field of NLP and ML. Ensure that your work aligns with best practices, ethical considerations, and the evolving landscape of LM technology. Regularly refer to the project description and grading rubric to meet the specified requirements and expectations.

Task Level (Hard):

7. Conclusion and Insights: Summarize your findings, draw insightful conclusions from the LM analysis, and discuss potential applications or areas for improvement. Reflect on the broader implications of your work within the context of the rapidly evolving field of AI and LM technologies.

By the conclusion of this project, you should have not only implemented an LM of your choice but also conducted a robust analysis, showcasing your ability to navigate and leverage advanced AI models for language processing tasks.

Resources: https://roadmap.sh/ai-data-scientist