AL/ML Internship - Problem Test

Prepared for: Shortlisted Candidates
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1 October 2024

Problem Statement

Create a small LLM application to generate Mobile UI Designs.

Introduction

The objective of this internship hiring task is to utilize the dataset provided in the Hugging Face datasets repository(given below) to create a small RAG based application that can generate new images of mobile UI designs based on input provided to a Large Language Model (LLM) of your choice. The task involves implementing machine learning techniques, particularly natural language processing (NLP) and computer vision (CV), to generate mobile UI designs based on the text query provided by the user.

Dataset

The dataset can be accessed through the following link: https://huggingface.co/datasets/mrtoy/mobile-ui-design.

Task Description

- ***Dataset Exploration***:
    - Explore the provided dataset to understand its structure, features, and the type of data available. This includes examining the format of the data, the categories of UI designs, and any associated metadata.
- ***Model Selection***:
    - Select appropriate machine learning models and techniques for natural language processing and computer vision tasks. Candidates are free to choose any Language Model (LLM) of their choice, along with suitable computer vision models for image generation.
- ***Model Training***:
    - Train the selected models using the provided dataset. Fine-tune the models if necessary to improve performance on the specific task of generating mobile UI designs based on input design patterns.
- ***Application Development***:
    - Develop a small RAG-based application that allows users to input their query. The system should take the query into account to generate a new UI/UX mobile design as an image. The application does not need to have a user-friendly interface for inputting text-based design patterns. Simple python based commands would also do. But if you manage to quickly setup a chat-based UI, that would be considered a brownie point, however this is not mandatory.
- ***Design Generation***:
    - Implement the functionality to generate new images of mobile UI designs based on the input text provided by the user. Utilize the trained models to interpret the input texts and generate corresponding UI designs.

- ***GitHub Repository***:
  - Create a GitHub repository to host the source code of the application along with any necessary files. The repository should be well-organized and include clear instructions for running the application.
- ***Evaluation***:
  - Evaluate the performance of the application in generating mobile UI designs. Consider metrics such as design accuracy, and visual quality.
- ***Documentation***:
  - Provide clear documentation detailing the process followed in training the models, developing the application, and evaluating its performance. Include instructions for running the application and any dependencies required. The documentation should be included in the GitHub repository.

Submission Guidelines

- Submit the GitHub repository link containing the source code, documentation, and any necessary files.
- Ensure that the repository is accessible and well-documented for easy evaluation.

Evaluation Criteria

The submission will be evaluated based on the following criteria:

- Quality of the developed application.
- Effectiveness of the model in generating mobile UI designs.
- Clarity and completeness of the documentation.
- Creativity and innovation in tackling the task.
- Overall presentation and organization of the GitHub repository.
- Most Importantly your approach towards solving the problem will be evaluated.

Time

The project should take roughly around 2-3 days. You'll have 4 days of time from receiving this problem statement. By the 4th day, please submit whatever you have completed as the evaluation will be proceeded according to your problem solving approach along with your submissions.

Note: Feel free to reach out if you need any clarification or assistance during the task. Good luck!

- Team TheCodeWork