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AT82.05 Artificial Intelligence: Natural Language Understanding (NLU)

A8: Alpaca Instuction Tuning Evalutation

In this assignment, we will focus on building a instruction model using the Large Language Model (LLM) from Hugging Face. We'll leverage the capabilities of LLM and enhance our training process by utilizing Alpaca Format for instruction tuning and evaluation with Alpaca Eval. Additionally, you will develop a simple web application to demonstrate the language model's capabilities interactively.

Note: You are ENCOURAGED to work with your friends, but DISCOURAGED to blindly copy other's work. Both parties will be given 0.

Note: Comments should be provided sufficiently so we know you understand. Failure to do so can raise suspicion of possible copying/plagiarism.

Note: You will be graded upon (1) documentation, (2) experiment, (3) implementation.

Note: This is a one-weeks assignment, but start early.

Deliverables: The GitHub link containing the jupyter notebook, a README.md of the github, and the folder of your web application called 'app'.

Task 1. Alpaca Dataset - Your first task is to load alpaca dataset. (1 points)

1) Download Alpaca Dataset from Repo GitHub[1]
2) Map json format with dataset package
3) Setup instruction format

Task 2. Model Training - Incorporate the chosen dataset into our existing code framework. Train a language model that can understand the context and style of the text. (2 points)

1) Training using Trainer and SFT [2]

Task 3. Model Evaluation - Incorporate the chosen dataset into our existing code framework. Train a language model that can understand the context and style of the text. (1 points)

1) Using Alpaca eval dataset [3]
2) Comparing your generated result with gold label

Task 4. Text Generation - Web Application Development - Develop a simple web application that demonstrates the capabilities of your language model. (1 points)

1) The application should include an input box where users can type in a text prompt.
2) Based on the input, the model should generate and display a continuation of the text.
3) Provide documentation on how the web application interfaces with the instruction model.

Best of luck in developing your text-generation model!

[1] https://github.com/tatsu-lab/stanford_alpaca/blob/main/alpaca_data.json
[2] https://huggingface.co/docs/trl/sft_trainer
[3] https://huggingface.co/datasets/tatsu-lab/alpaca_eval