Fine-Tuning based on 2000 drug examples from an Excel file

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Preparing the Data and Launching the Fine Tuning

Convert the XLSX data file into JSONL format for fine-tuning the model using Pandas and OpenAI tools.

Write a python file to convert the XLSX data:

It will have this format:

{"prompt":"Drug: Acleen 1% Lotion 25ml\nMalady:","completion":" 0"}

```
# Reading the first n rows of data from the Excel file
# 'Medicine_description.xlsx' and stores it in a data frame called df.
df = pd.read_excel('Medicine_description.xlsx', sheet_name='Sheet1',
        header=0, nrows=n)

# Get the unique values in the 'Reason' column of the data frame,
# stores them in an array called reasons
reasons = df["Reason"].unique()

# Assigns a numerical index to each unique value in the reasons
# array, and stores it in a dictionary called reasons_dict.
reasons_dict = {reason: i for i, reason in enumerate(reasons)}

# Add a new line and "Malady:" to the end of each drug name in
# the 'Drug_Name' column of the data frame.
# - The desired format:
#       Drug: <Drug_Name>\nMalady:
df["Drug_Name"] = "Drug: " + df["Drug_Name"] + "\n" + "Malady:"

# It concatenates a space and the corresponding numerical index
# from the reasons_dict to the end of each 'Reason'
# value in the data frame.
df["Reason"] = " " + df["Reason"].apply(lambda x: "" + str(reasons_dict[x]))

# For this example, we don't need the 'Description' column, that's
# why the script drops it from the data frame.
df.drop(["Description"], axis=1, inplace=True)

# Renaming the 'Drug_Name' column to 'prompt'
# and the 'Reason' column to 'completion'.
df.rename(columns={"Drug_Name": "prompt", "Reason": "completion"}, inplace=True)

# Convert the dataframe to jsonl format
jsonl = df.to_json(orient="records", indent=0, lines=True)
```

02 Command to Prepare Data

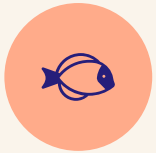
Analyze and prepare the data using the OpenAI tools fine_tunes.prepare_data command.

$openai tools fine_tunes.prepare_data -f drug_malady_data.jsonl

```
openai tools fine_tunes.prepare_data -f drug_malady_data.jsonl
Analyzing...

- Your file contains 2000 prompt-completion pairs
- Based on your data it seems like you're trying to fine-tune a model for classification
- For classification, we recommend you try one of the faster and cheaper models, such as `ada`
- For classification, you can estimate the expected model performance by keeping a held out dataset, which is not used for training
- All prompts end with suffix `\nMalady:`
- All prompts start with prefix `Drug: `

No remediations found.
- [Recommended] Would you like to split into training and validation set? [Y/n]: Y


Your data will be written to a new JSONL file. Proceed [Y/n]: Y

Wrote modified files to `drug_malady_data_prepared_train.jsonl` and `drug_malady_data_prepared_valid.jsonl`
Feel free to take a look!

Now use that file when fine-tuning:
> openai api fine_tunes.create -t "drug_malady_data_prepared_train.jsonl" -v "drug_malady_data_prepared_valid.jsonl" --compute_classification_met
rics --classification_n_classes 7

After you've fine-tuned a model, remember that your prompt has to end with the indicator string `\nMalady:` for the model to start generating com
pletions, rather than continuing with the prompt.
Once your model starts training, it'll approximately take 50.33 minutes to train a `curie` model, and less for `ada` and `babbage`. Queue will ap
proximately take half an hour per job ahead of you.
```

03 Command to Train the Model

export
OPENAI_API_KEY=xxxxxxxx



openai api fine_tunes.create \
-t "drug_malady_data_prepared_train.jsonl" \
-v "drug_malady_data_prepared_valid.jsonl" \

–compute_classification_metrics \
–classification_n_classes 7 \
-m ada \
–suffix "drug_malady_data"

Notice: classification_n_classes is getting from the xlsx file

04 Get the result

After running step3 command, you can check job process by using the following command:

openai api fine_tunes.follow -i <JOB ID>

```
[2023-11-20 18:58:34] Created fine-tune: ft-Ud7e3YAlwTO3IlSl7eWnHAz0
[2023-11-20 19:04:48] Fine-tune costs $0.05
[2023-11-20 19:04:48] Fine-tune enqueued. Queue number: 0
[2023-11-20 19:04:50] Fine-tune started
[2023-11-20 19:10:10] Completed epoch 1/4
[2023-11-20 19:20:30] Completed epoch 3/4
[2023-11-20 19:26:06] Uploaded model: ada:ft-personal:drug-malady-data-2023-11-21-03-26-06
[2023-11-20 19:26:07] Uploaded result file: file-QmWGslMVmDmrr5lbEa5OmLd2
[2023-11-20 19:26:07] Fine-tune succeeded

Job complete! Status: succeeded 🎉
Try out your fine-tuned model:

openai api completions.create -m ada:ft-personal:drug-malady-data-2023-11-21-03-26-06 -p <YOUR_PROMPT>
```

05 Conclusion

Structured Data Transformation:

- Conversion to JSONL format.
- Use of unique identifiers for maladies.

Python Script and Pandas:

- Efficient data preparation.
- Adaptable to various dataset sizes.

CLI Commands for Insight:

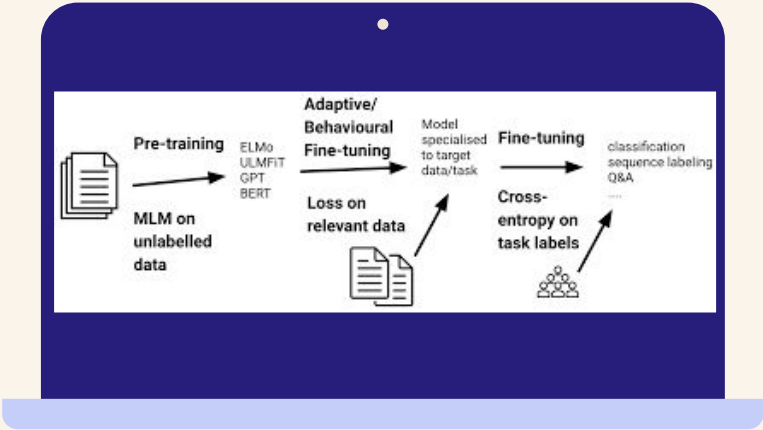
- Analyzing data
- Using fine_tunes.prepare_data.
- Choosing model and monitoring progress.

Empowering Customization:

- Fine-tuning results in a tailored, powerful model.
- Iterative process for targeted applications.

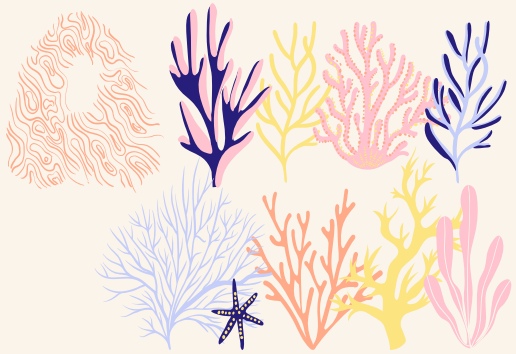
Enhancing Model Performance:

- Leveraging advanced language models.
- Optimizing for specific use cases.



References

https://hc.labnet.sfbu.edu/~henry/sfbu/course/generative_ai/Advanced_Fine_Tuning_Drug_Classification/slide/Preparing_the_Data_and_Launching_the_Fine_Tuning.html



Thanks!

Do you have any questions?

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