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REPORT 1

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Summary report

I have created necessary tools for prompting OpenAI[1], gathering results and saving them. To be more precise, the most important piece is an Engine that is capable of talking to the OpenAI public API with all the arguments and slowdowns that are required by the API. Next, we have a storage system for data that includes a HDF5 [1] storage system which is used via pandas [2] python library. Lastly, simple scripts that parse the output from OpenAI and a base template with versioning for all the future prompting that will be done in this project. All this code is available in GitHub repository[2].

All the experiments that were done below have been tested on the biggest OpenAI model, "text-davinci-002". It is worth keeping in mind that these results might not be fully reproducible, as this model has randomness in its output by design – it could be switched off (the parameter in question is called "temperature"), but that would highly degrade the generational capabilities that are meant to be tested in this experiment.

Experiments seem to show that listing prompt where we ask the model to provide us a list of something (here, we asked for ingredients of recipes) works pretty much without any problems. Model returns clear and consistent results even with high temperature (here, 0.9 was used, with the accepted values between 0 and 1). The results are so consistent, from 1130 recipes that were prompted for 10 ingredients, we got more than 10 ingredients per recipe – exactly 10.012 ingredients per each recipe. The template for such prompts were as follows:

> List 10 **what** of **object**:
> 1.

For this data gathering, this prompt was used (with different dishes, not only cake):

> List 10 ingredients of cake:
> 1.

The list is already started in the prompt in order for the model to follow the conventions. Otherwise, it is easily distracted and can list them in a multitude of ways – which is worthless for any big data processing or manipulation afterwards.

Similar attempts, though much smaller, have been made into listing functions of ingredients in a dish – meaning, given a dish name and an ingredient, the model is supposed to determine the function said ingredient fulfills in a dish. This has not proven as easy as it sounds, as the wording returned is inconsistent – verbs, adjectives and nouns are all mixed together. Listing of the functions itself seems to be almost as good as the above experiments. This will be explored in more detail in subsequent report.

[1] OpenAI: `https://openai.com`
[2] GitHub: `https://github.com/taisti/ingredient_functions`

References

[1] The HDF Group, "Hierarchical Data Format, version 5," 1997-NNNN. https://www.hdfgroup.org/HDF5/.

[2] T. pandas development team, "pandas-dev/pandas: Pandas," Feb. 2020.