



Data Scientist / ML Engineer

Learning Experience

Data Scientist / ML Engineer (Learning Experience)

Assignment

The purpose of this assignment is two-fold:

- To give you a better sense of the role.
- To give us a sense of whether you would be a good fit for the role.

As you work through this assignment, note that:

- The structure of the assignment is intentionally broad to give you the freedom to think about the assignment on your own terms. Make sure to include any assumptions you are making as you complete this assignment.
- We understand you don't have enough context on our operations and our business to fully comprehend the goals we are trying to achieve.
- We understand that in a perfect world, you'd have more time to research and complete this task. Understanding constraints, prioritizing, and demonstrating a "done, not perfect" mindset is part of what we look out for. So, in places where you don't have enough time to complete the task to your standards, please share your thought process and your next steps if you have more time.

What you share here is only for assignment purposes. We do not intend to use your submission beyond this recruitment process.

Although we have removed identifying information from the data you will receive, the contents of the database, and any analysis thereof are **confidential**. Please remove all data from your machine as soon as we have confirmed your submission.

Aside from the submission deadline, the parameters of this assignment are purposefully broad and open to your interpretation and understanding.

We'd like you to return your assignment submission in **one ZIP folder** that includes **the** database, notebook(s), and/or scripts on the date stated in the email. Please let us know **at least 24 hours in advance** if you won't be able to submit on time.

We do not take the evaluation for this role lightly. We appreciate your time, effort, and understanding.

We look forward to receiving your assignment!

All the best!

Context:

Our current vision is to improve our cost efficiency and user experience on our learning platforms. We are using off-the-shelf LLM-based chatbots to facilitate student queries on our learning platforms.

This agent is very valuable to the customer support team, handling over 150,000 queries in the first six months of 2024, reducing their support load by 80%. The drawback is that the current off-the-shelf solution does not provide insight into the application's performance and operates autonomously and blindly.

Assignment:

Our customer support team has reached out to you and asked for assistance. Your assignment will be to complete only **one** of the following three challenges:

1. **Challenge 1:** Help them **understand what queries students have**. Perhaps a solution will be to categorize and cluster the queries to give them an overview of the queries.
 - a. Present the solution to a lay audience. For example, create a simple dashboard and/or report that communicates weekly or monthly data with simple filters.
2. **Challenge 2:** Help the customer support team to **build an interface** to the database that facilitates human review.
 - a. Provide a user-friendly interface for a customer support agent to access a conversation (which conversation does not matter for now) that can show all of the messages in a conversation and do any (one or more) of the following:
 - i. Provide a conversation/message rating mechanism (stars, preset improvements).
 - ii. Provide a good human answer to any of the messages.
 - iii. Select a random unreviewed conversation to review.
3. **Challenge 3:** Create an evaluation framework to assess the performance of the LLM agent.
 - a. Assess, based on the use case, how to evaluate the performance of the LLM
 - b. Metrics like truthfulness, relevance, accuracy, and context are good starts.
 - c. Keep in mind that the data is only a sample of a much larger dataset.
 - d. If you need access to an LLM, use free LLM APIs like [Groq](#) or locally hosted LLMs like [Ollama](#), [GPT4All](#), or [Llamafire](#).

The **dataset** can be found [here](#) and includes:

- SQLite database file with three tables, conversations, messages, and bots.
- A markdown formatted data dictionary.

Consider yourself the custodian of these students' data. Please remove all data from your machine once we have confirmed your submission.