AI Agent Work Sample

You have a data set of air quality data from multiple rooms.

The data set consists of one file for each room.

The file has a series of air quality sensor readings. Each reading has a timestamp and values for the carbon dioxide levels, temperature and humidity at that time.

Your job is to build an AI agent that will allow the user to analyze the data using natural language queries.

The interface for this should be a simple web application with a text box for the user to enter their query and submit. The tool should process the query, analyze the relevant data in the files and present a result.

The results should use text and tabular data where applicable.

Some examples:

Question: How does the temperature in Room A change by hour of the day?

Sample Answer:

Hour	Temperature
00:00	22
01:00	24
02:00	23.5
…	…
23:00	19.4

Another sample answer:

‘The temperature goes down as the hours increase until 12pm at which

point temperature goes up'

Question: How does co2 vary by day of the week?

Sample Answer:

Day Of Week	Average CO2 Across All Rooms
Monday	330.2
Tuesday	400.1
Wednesday	430
Thursday	310
Friday	540
Saturday	500
Sunday	704

Some other sample questions:

- Which room had the highest temperature reading last week?
- Which room had the biggest variation in co2 levels?
- List the rooms in order of hottest to coolest using average temperature in a day
- What is the average temperature of each room in mornings and evenings?

Please note the following hints and constraints:

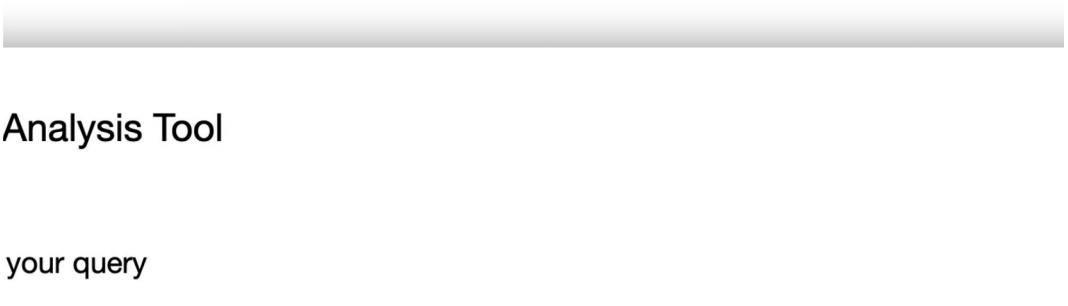
- The backend code should be in python3.
- The frontend code should be in react.js
- Use a `.env` file for any API keys or other parameters that can be

changed

- Note that the files are not json files but contains lines of data where each line is a json object
- Try not to pre-load the data into a database first. Try and do the exercise using the raw files (so that if we change or add new files it will still work)
- Make use of any LLM of your choice for this
- You should incorporate tool-use into your LLM workflow to read and analyze data
- Note that the field names in each file are slightly different even though they represent the same data (ie, in one file, the co2 value maybe in a field called `co2` . In another, it may be in a field called `CO2 (PPM)` . This is intentional. Your agent should be smart enough to deal with this.
- You can make use of any kind of tools you want to incorporate including dynamic code evaluation
- Bonus points for having results be attractive and nicely formatted and including charts where applicable
- Bonus points for structuring your prompts cleanly and enabling further improvements on it.
- If you need an API Key for GPT please let us know

The following is a simple wire frame for the tool:

Query Screen



Result Screen:

Analysis Tool

ion: What was the average co2 levels across all rooms for each day of the week?

er:

Day Of Week	Average CO2
Monday	454.2
Tuesday	500
Wednesday	300.4
Thursday	924.2
Friday	800.9
Saturday	300.4
Sunday	450.0

Your output code should be a combination of python and javascript.

Please be prepared to explain and walkthrough your code and prompts in a call.

Download the sample json data here:

sensor-data.zip 72.1KB