A magnifying glass is positioned over a data visualization on a document. The visualization includes a bar chart with blue bars and a line chart with blue lines and circular markers. The x-axis is labeled with months: Jan, Feb, Mar, Jul, Aug. The y-axis has numerical values: 0, 15,000, 30,000, 45,000, and 60,000. A silver pen lies diagonally across the chart. The background is a dark gray triangle on the right side of the image, and there is an orange triangle at the bottom left.

BUILDING A DATA ANALYTICS AGENT USING LLM

About Me

I'm a Computer Engineering graduate and a passionate data scientist. My journey has been fueled by a strong foundation in data analysis, visualization, and tools like Microsoft Fabric, which I utilize to derive impactful insights.

In my current role, I have:

- Collaborated on client projects to develop scalable ETL pipelines using Microsoft Fabric.
- Delivered data-driven solutions for various clients through Power BI.
- Authored articles on Power BI, Microsoft Fabric, and LLMs to share insights and practical applications.

Agenda

- Introduction to Data Analysis Agents
- Features of Data Analysis Agents
- Explore Real-World Examples
- Hands-On Exercise
- Discuss Importance of Analytics agents
- Q&A and Resource Sharing

What is Data Analysis Agent?

A Data Analytics Agent allows users to interact with data using natural language. It automates the process of interacting with and analyzing datasets by querying databases, generating insights, or visualizing trends.

Features of Data Analysis Agent



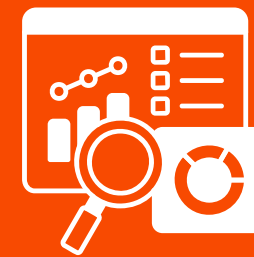
Accepts natural
language prompts



Converts prompts
into SQL/Python



Understands column
names, and data
types



Executes code and
returns charts, stats,
or answers

Real-World Example

Microsoft Power BI Copilot

- Enables users to ask data questions in natural language.
- Converts prompts to DAX measures, visuals, and summaries instantly.

Microsoft Fabric Copilot

- Embedded across data pipelines, notebooks, lakehouse, Power BI.
- Helps generate code, transform data, summarize results using context-aware prompts.

Copilot in Excel

- A powerful tool designed to simplify and transform data analysis.
- Simplifies data preparation and enhances analytical capabilities.

Tableau Agent

- Allows users to explore data by asking questions directly in Tableau.
- Create calculations and visualizations using conversational prompts.

PowerBI Copilot

Copilot Preview

Here are some things you can try:

- Create a new report page
- Suggest content for this report
- Answer this data question ...

Suggest content for this report

OK, here's a suggested outline for your report. Select any page topic to view details and start creating pages.

- Customer Analysis
- Product Performance
- Sales Territory Evaluation
Create a page to evaluate sales performance across different territories.
+ Create
- Employee Performance

Create a page to evaluate sales performance across different territories.

Created a Sales Performance Across Territories page.
Undo

Describe the report you want to create or ask a question

Always review AI-generated content for mistakes. [Learn more](#)

New Quick measure Sensitivity Publish

Calculations Sensitivity Share

Quick measure

Suggested measures

Count of orders where state is new york

Preview value

94

DAX ?

```
Measure =  
CALCULATE(  
    COUNTROWS('Orders'),  
    KEEPFILTERS(  
        'Orders'[State] = "new york"  
    )  
)
```

Show more

Add

Home Help External tools

Cut Copy Format Comment Uncomment Find Replace Command palette Copilot (preview) Copilot

Clipboard Editing

Run

list the top 5 resellers by total reseller sales \$

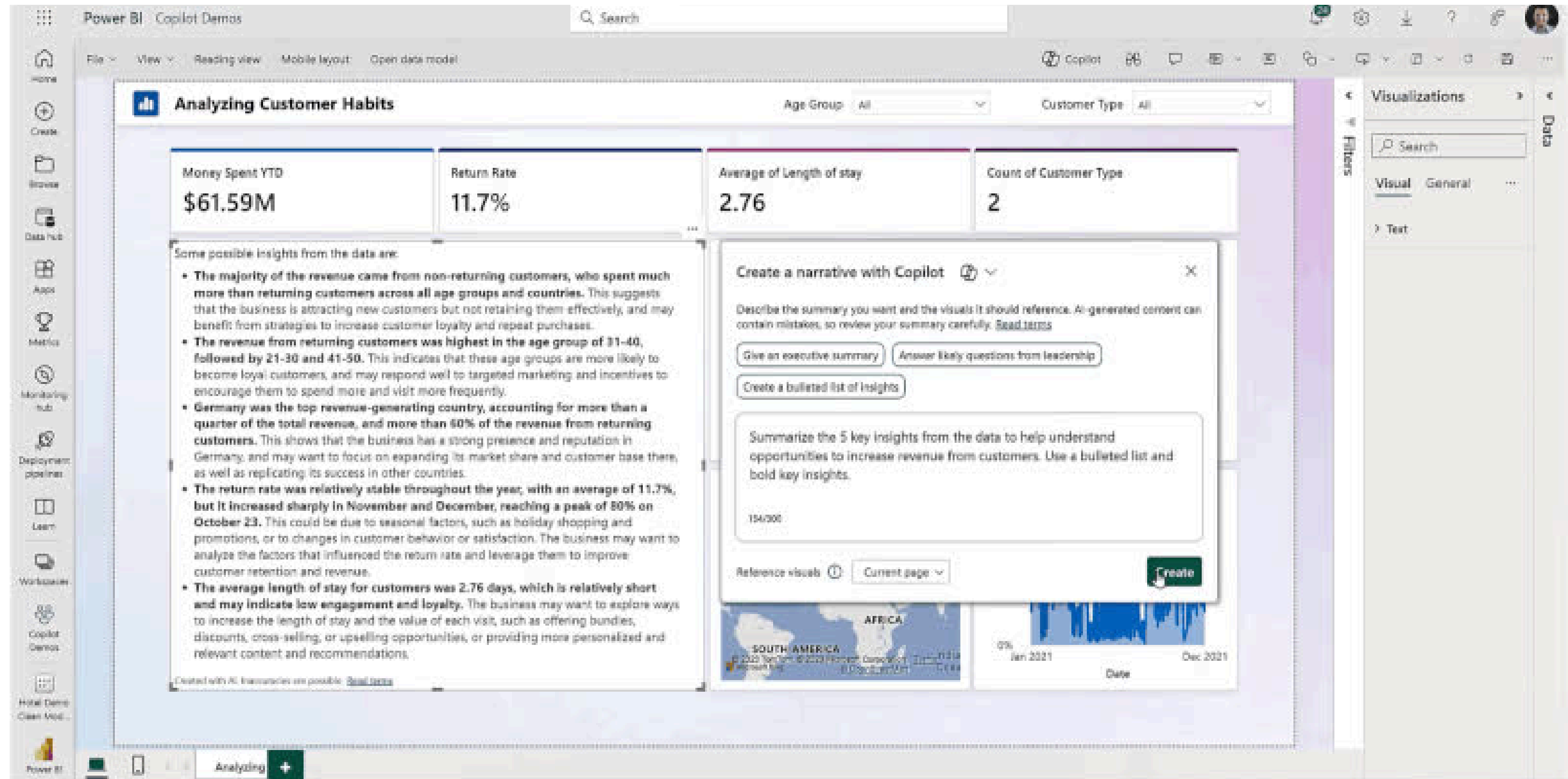
Working on it ... Cancel

Results

Your query results will show up here

Query 1 +

Microsoft Fabric Copilot



Excel Copilot

A21

×

✓

f_x

	A	B	C	D	E	F	G
1	Advanced Analysis						
2	This sheet will include all Python code generated by Copilot.						
3							
4	Load data from EV Charger Data, Table14						
5	[↵] DataFrame						
6							
7	Preview						
8		Product_ID	Category	Revenue	Units_Sold	Marketing_Prod	
9	0	P001	Standard C	2505	55	1323.7	Abso
10	1	P002	Fast Charg	2515	58	1241.6	Not s
11	2	P003	Standard C	2515	55	1219.7	This p
12	3	P004	Standard C	3658	54	1265	Great
13	4	P005	Standard C	5006	51	1326.8	Wors
14
15	45	P046	Fast Charg	11648.25	49	1432.83	Charg
16	46	P047	Fast Charg	17460	85	2233	Satis
17	47	P049	Standard C	20257	94	2468.7	Simp
18	48	P048	Fast Charg	11297.25	56	1425.73	Great
19	49	P050	Standard C	11961.06	53	1426.11	Good
20							
21							
22							

AI-generated content may be incorrect

The boxplot above shows the revenue distribution by product category. It provides insights into the spread and central tendency of revenue within each category. You can proceed with further analysis such as examining the correlation between marketing spend and units sold, performing sentiment analysis on product reviews, or identifying top-performing products.

AI-generated content may be incorrect

Stop advanced analysis

Analyze the correlation between marketing spend and units sold.

Perform sentiment analysis on product reviews.

Using this workbook

Create 3 visualizations for me including a box and violin plot using Category and revenue, as well as a pair grid using Category as the Hue. Make them colorful, and consistent in formatting.

<

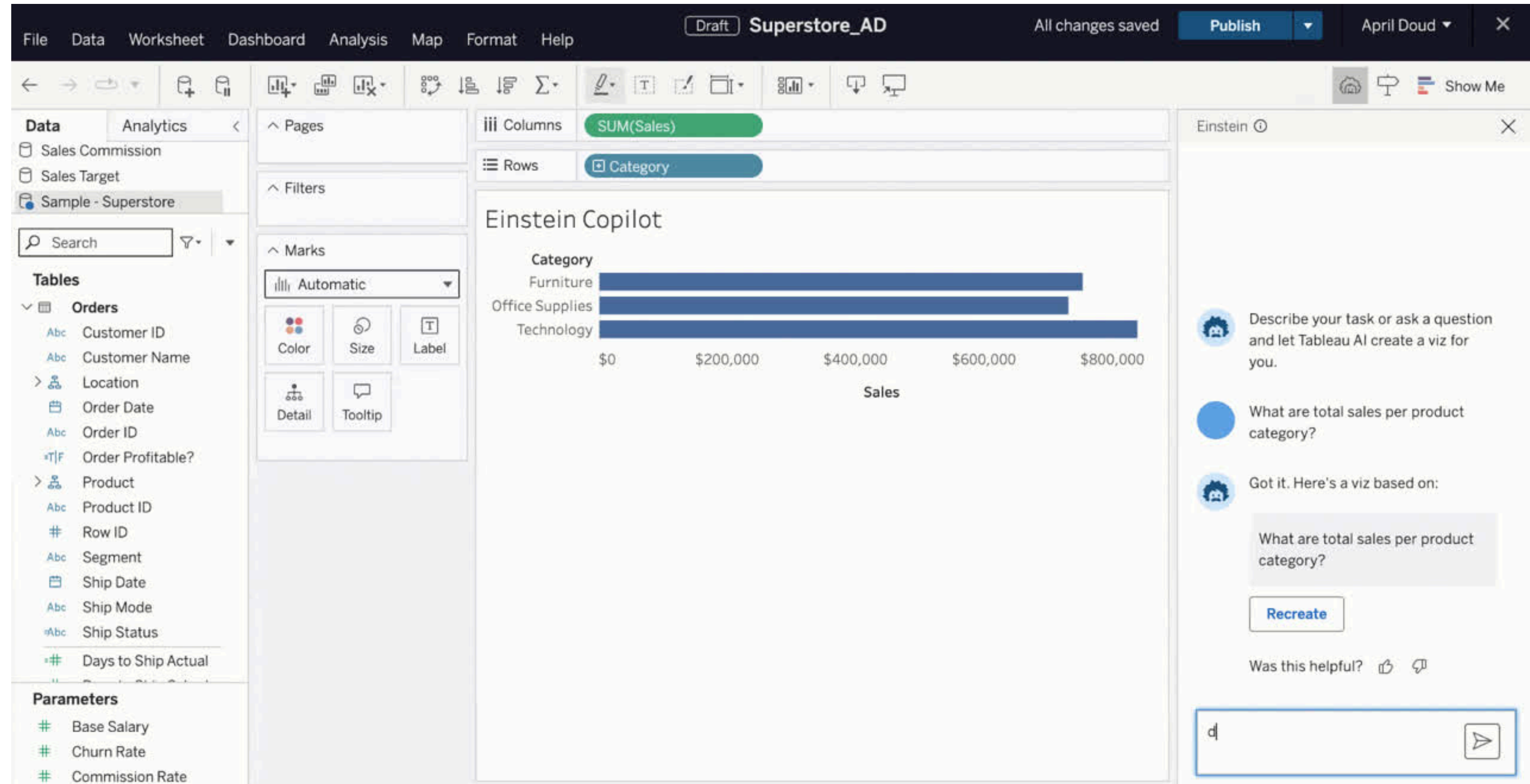
>

EV Charger Data

Analysis5

+

Tableau Agent

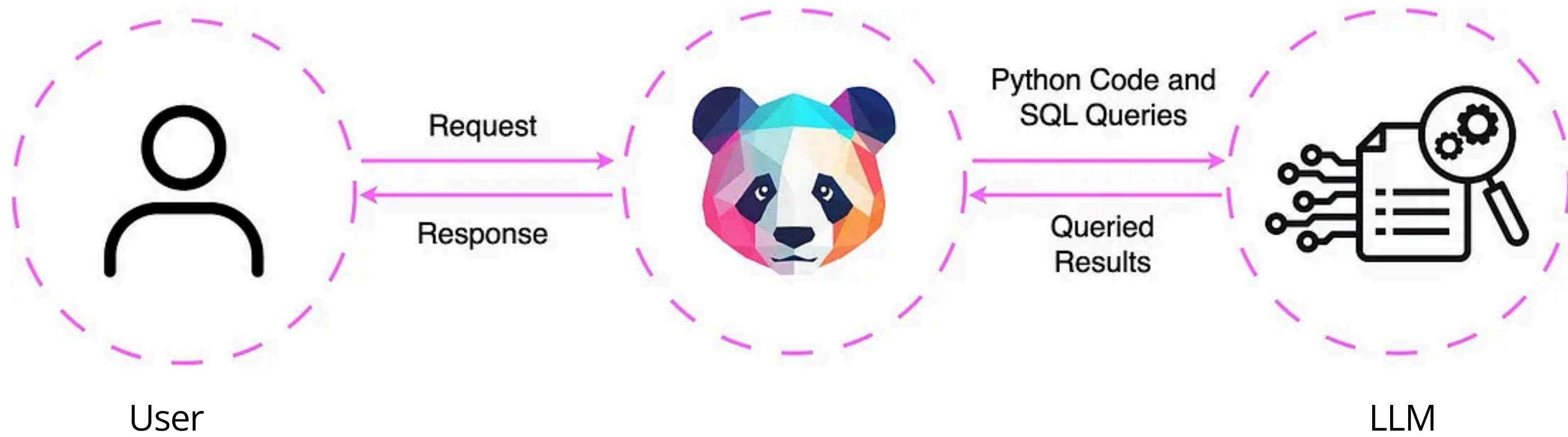


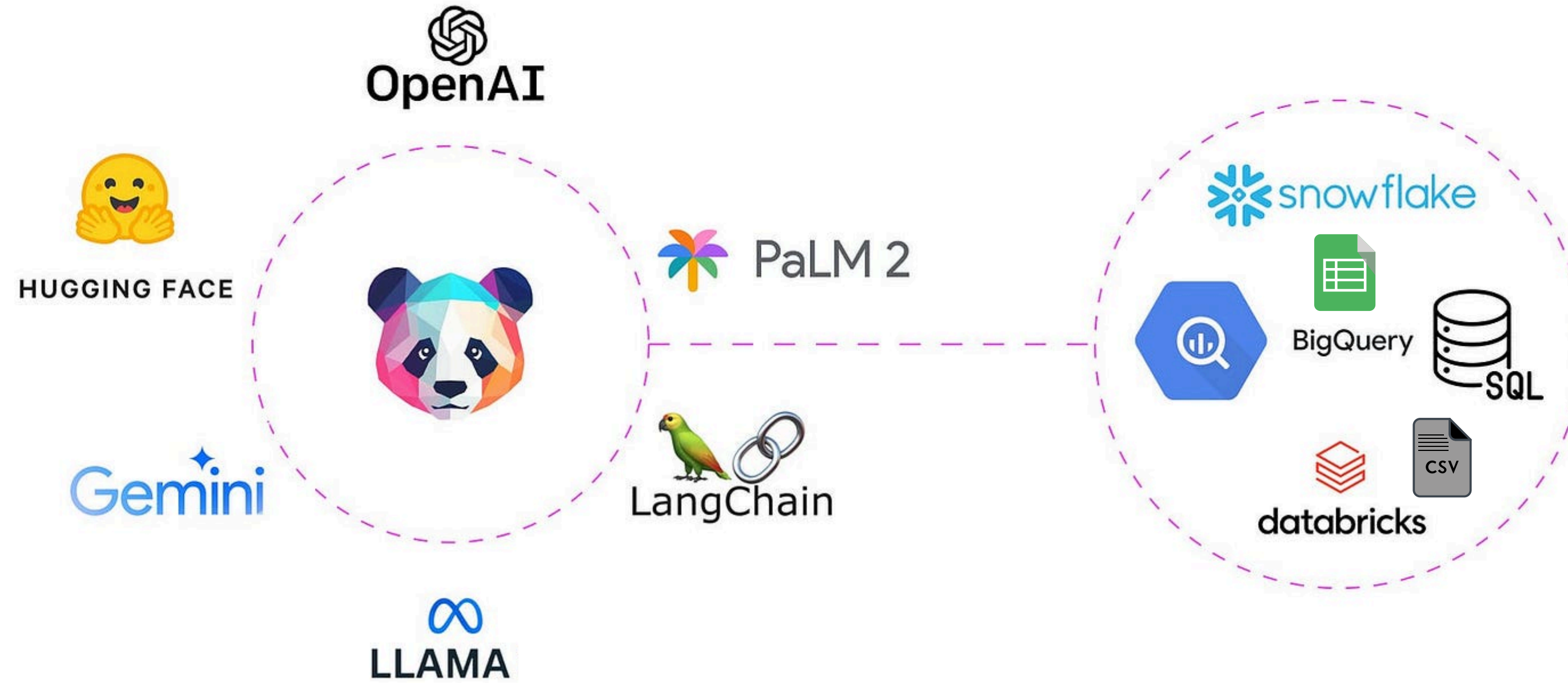
Hands-on Exercise

- Setting up the environment and necessary libraries (PandasAI).
- Load your data files: (CSV/XLSX)
- Integrating a Large Language Model (LLM): GROQ Qwen 3 32b
- Ask questions in Natural Language and get automatically generated answers, tables, or even graphs.
- Explore different functionalities of PandasAI

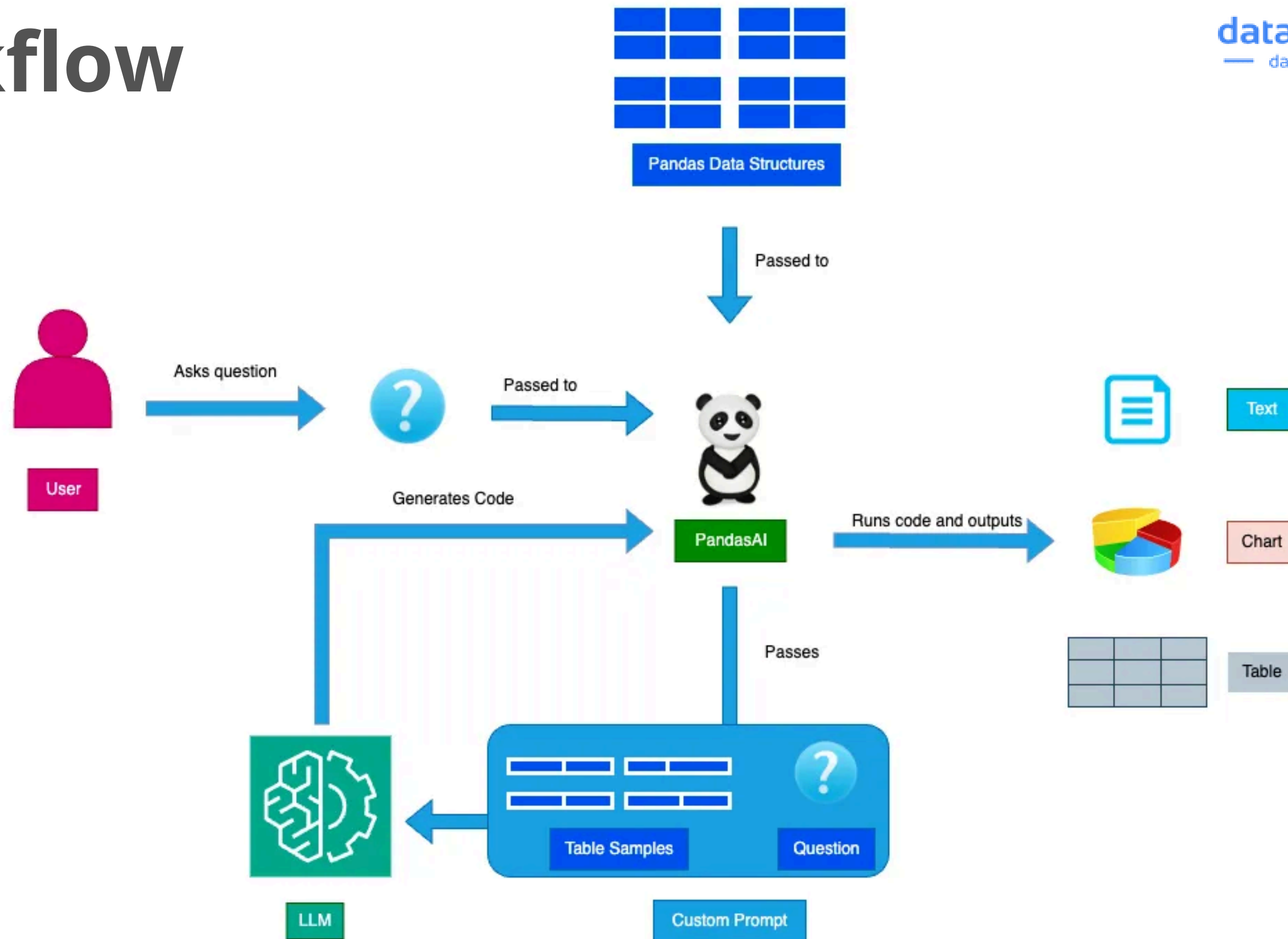


- PandasAI is a Python library that allows querying data in natural language.
- It facilitates data exploration, cleaning, and analysis using generative AI.
- PandasAI provides functionalities for visualizing data through graphs, and enhancing data quality through feature generation.





Workflow



Build your own Data Analytics Agent

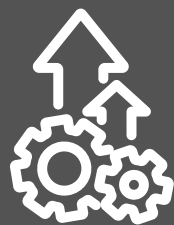
Importance of Data Analysis Agent



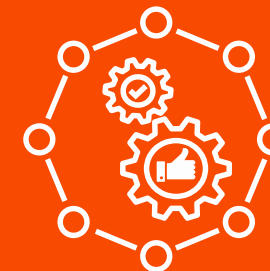
Natural Language
Interaction with Data



Faster Insights
Discovery



Increases
Productivity



Accessibility for Non-
Technical Users

Thank you!



Q & A Session