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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.

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Agenda

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

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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.

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Features of Data Analysis Agent

Accepts natural language prompts

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Converts prompts into SQL/Python

Understands column names, and data types

Executes code and returns charts, stats, or answers

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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.

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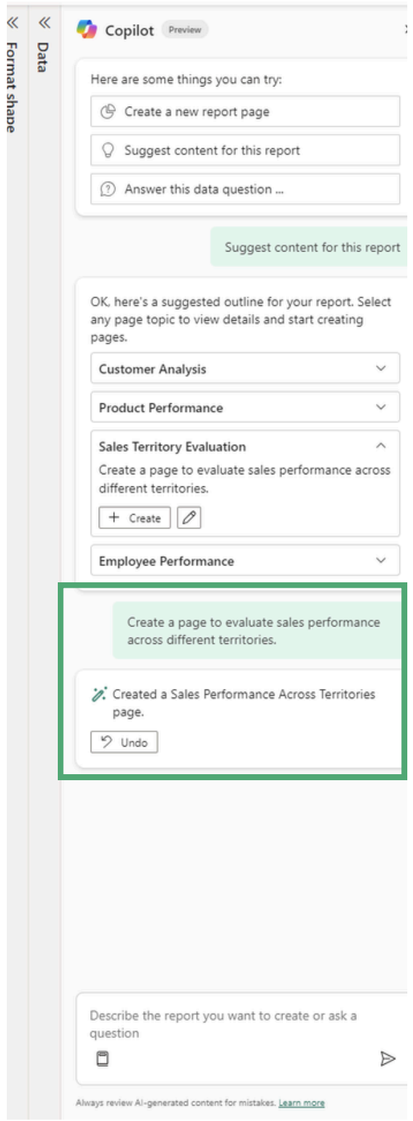
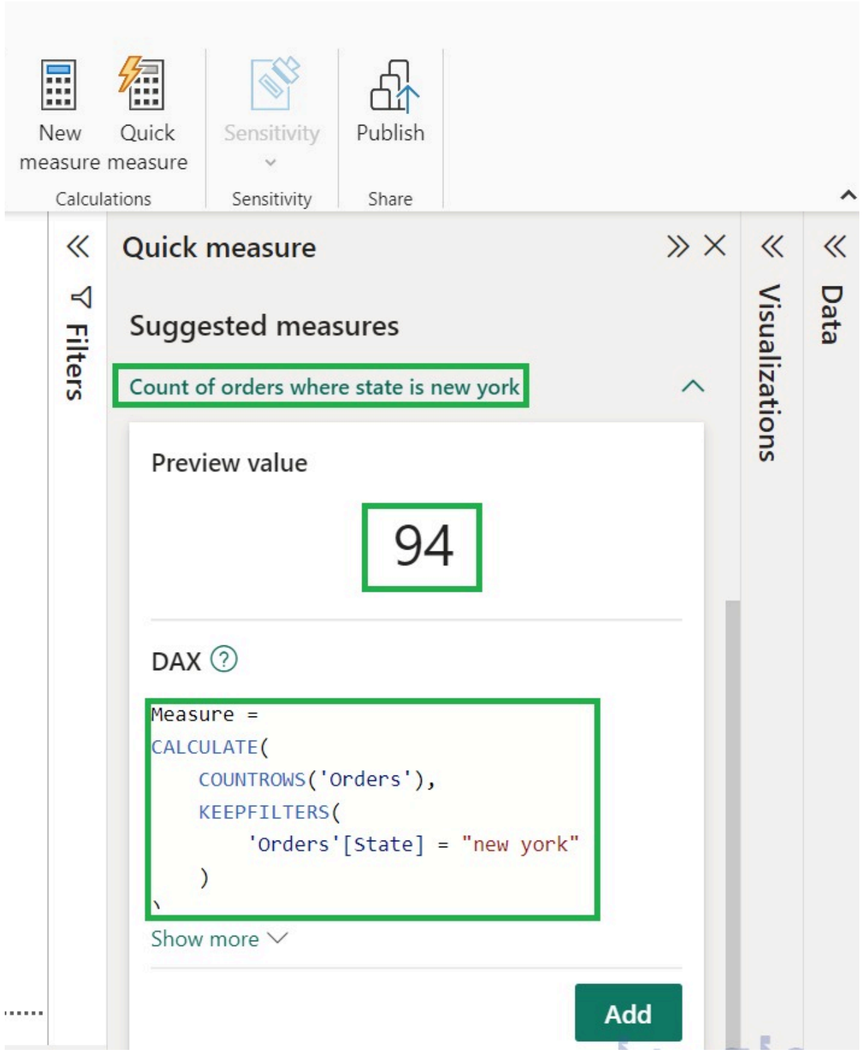
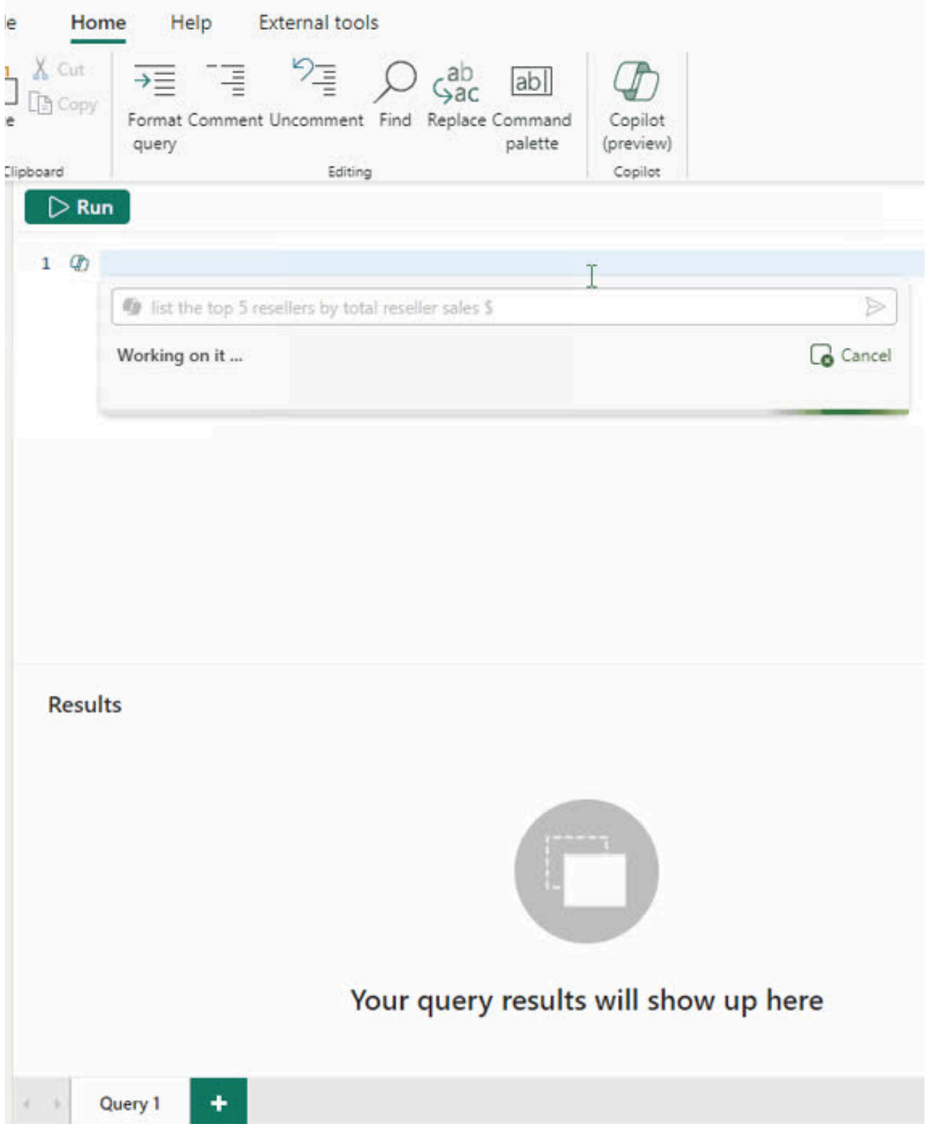
PowerBI Copilot







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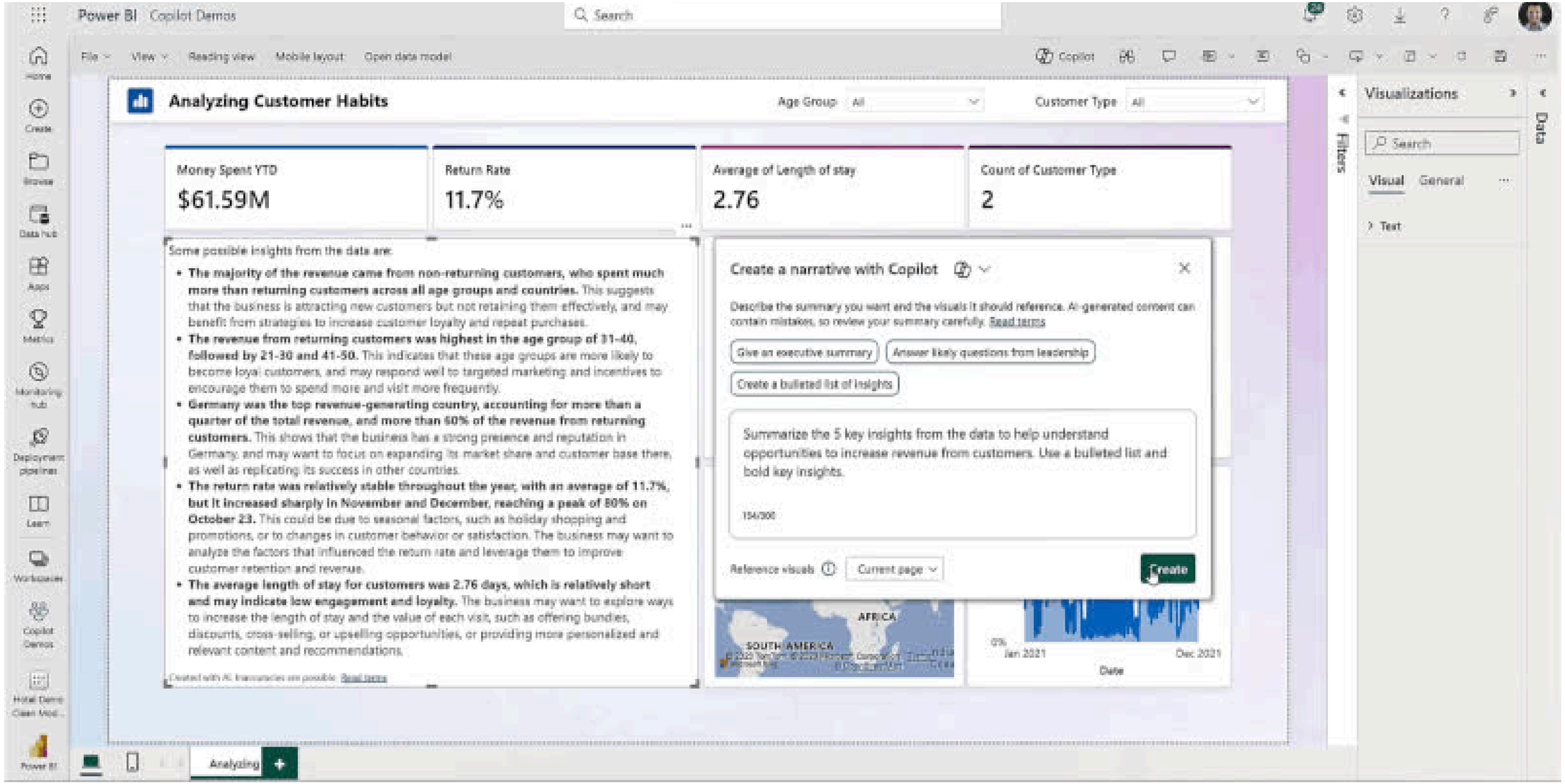
Microsoft Fabric Copilot



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Excel Copilot

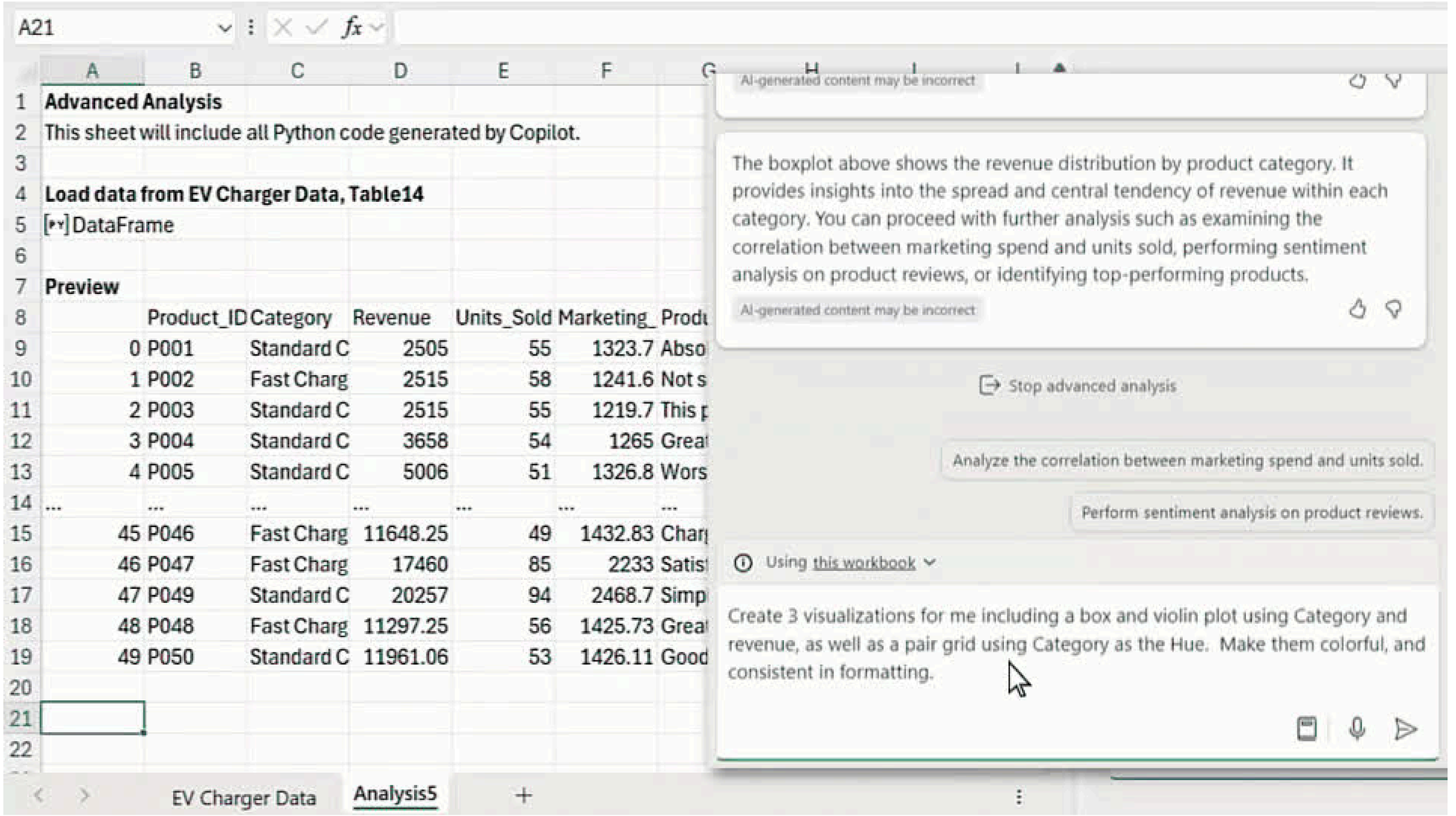

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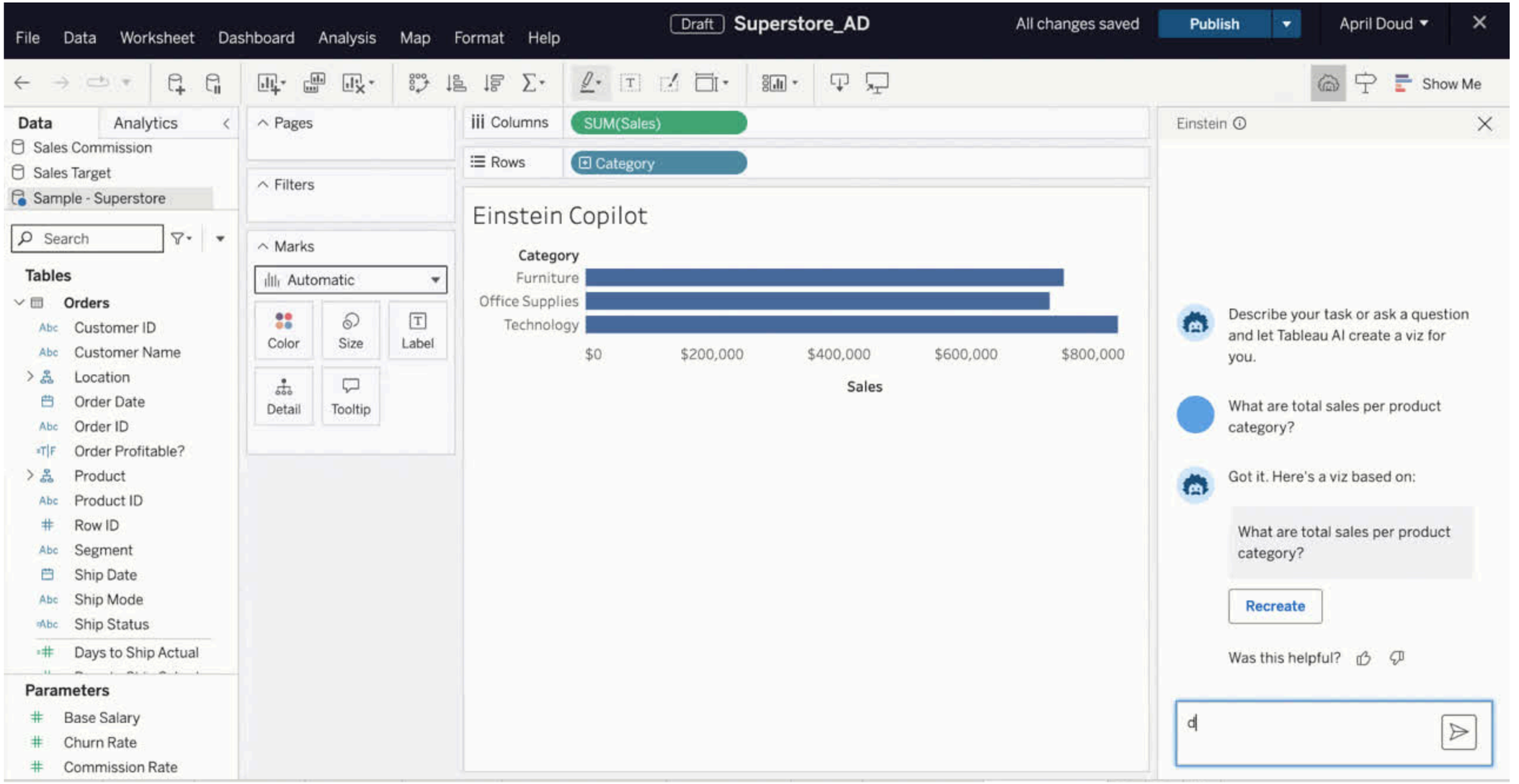
Tableau Agent



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Hands-on Exercise

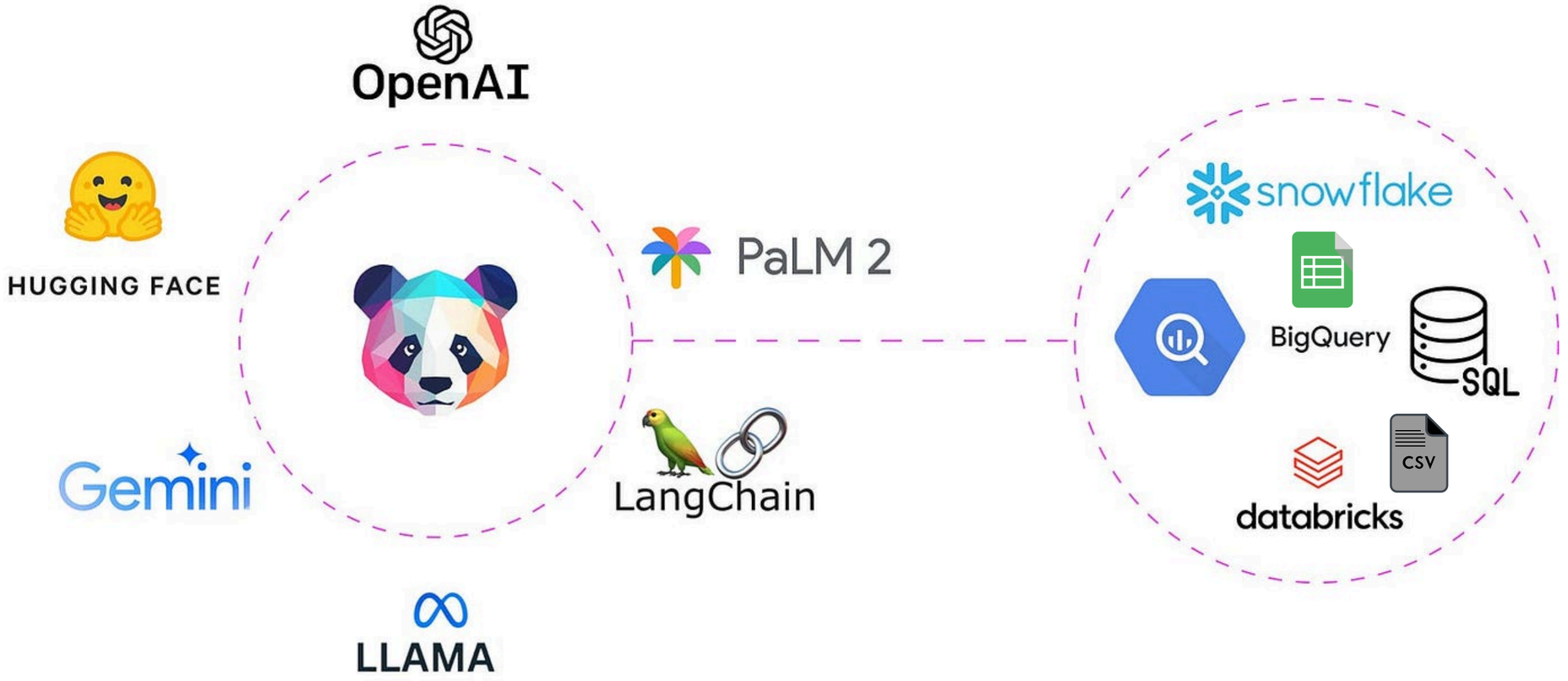
- Setting up the environment and necessary libraries (PandasAI).
- Load your data files: (CSV/XLSX)
- Integrating a Large Language Model (LLM): GROQ Qwen 3 32b
- Ask questions in Natural Language and get automatically generated answers, tables, or even graphs.
- Explore different functionalities of PandasAI

- 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.

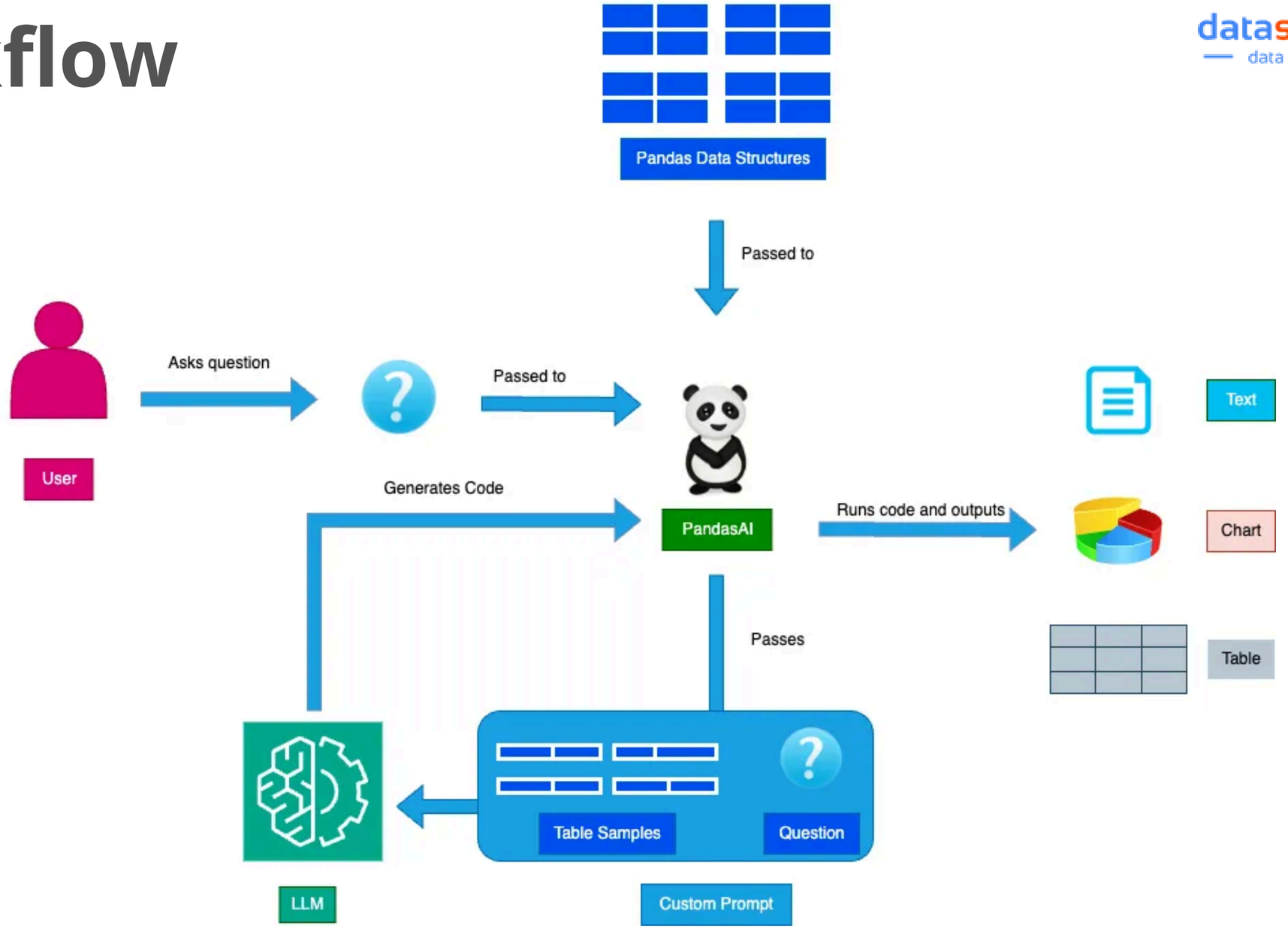
User

LLM

PandasAI


OpenAI
HUGGING FACE
PaLM 2
Gemini
LangChain
LLAMA
snowflake
BigQuery
SQL
CSV
databricks

Workflow


Pandas Data Structures
Passed to
Asks question
Passed to
User
Generates Code
PandasAI
Runs code and outputs
Text
Chart
Table
Passes
Table Samples
Question
LLM
Custom Prompt

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Build your own Data Analytics Agent

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Importance of Data Analysis Agent

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Thank you!

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Q & A Session