

AUTOBI : Revolutionizing Business Intelligence

Proof Of Concept

Presented by Francesco Amico, Founder of AMICOBI



AUTOBI: Pioneering Intelligent Automation in Business Intelligence

- ▶ AUTOBI represents a groundbreaking approach in intelligent automation (IA), utilizing a synergistic team of multiple AI agents. This advanced system delivers comprehensive end-to-end business intelligence web dashboards, requiring minimal user intervention.
- ▶ Designed to empower small businesses, AUTOBI enables the effortless creation of intricate and insightful dashboards. Users can simply upload their data or set up data connectors to start
- ▶ At the heart of AUTOBI lies the utilization of cutting-edge AI technologies, including a multi-agent framework and bespoke, teachable AI agents, setting a new standard in business intelligence solutions..

AUTOBI's Strategic Roadmap: From Concept to Market

- October 2023: High-level idea defined and refined.
- November – December 2023: Formation of the Team and development of the Proof of Concept.
- November 2023: Establishment of AMICOBI LLC.
- April 2024: Launch of the commercial version for selected pilot customers, marking the beginning of AUTOBI's market entry.
- September 2024: Expansion to a wider market, making AUTOBI accessible to all potential customers.

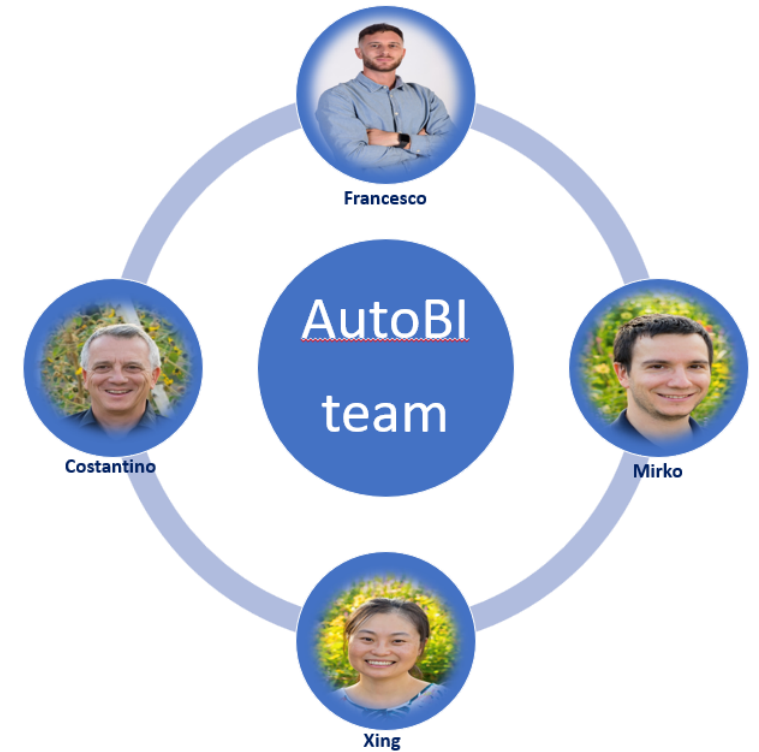


The core team

Our team is a multifaceted assembly of engineers and business experts. We boast two PhDs specializing in quantum computing and machine learning, together accounting for 14 years of in-depth industry experience in their respective fields.

Steering our business development and business intelligence initiatives is a Business Intelligence entrepreneur who brings over a decade of experience in the business intelligence and analytics field.

Complementing our roster is a seasoned software engineer who offers over 35 years of expertise in managing large-scale projects and crafting system architectures.



Proof Of Concept

- ▶ Our Proof of Concept (POC) demonstrates AUTOBI's capabilities on the web, encapsulating our core features. Users can simply upload files (Excel, multi-sheet Excel, or ZIP containing multiple Excls).
- ▶ AUTOBI's Process: The system automatically cleans, joins, and denormalizes data, extracts metadata and summary information (data profiling), and collaborates with our Multi AI Agent Team - consisting of Business Intelligence Analyst, Developer, and Code Reviewer.
- ▶ This AI Team collectively develops meaningful dashboards, deciding on the most insightful analytics to display. They develop, test, and refine these dashboards before release, ensuring top-notch quality and relevance for the end user.
- ▶ The proof of concept (POC) has been architected to support multiple users, each with varying subscription tiers: Standard, Plus, and Premium. Corresponding to each tier, there is a distinct level of proficiency attributed to the AI agents available.
- ▶ Natural Language Customization: AUTOBI includes an intuitive settings page where users can describe in natural language what they want to see in each section of the dashboard. The system interprets these inputs and automatically generates a tailored dashboard that meets the specific requirements of the user, enhancing the overall user experience and providing personalized insights.



User login and Subscription tier

iii Dash x +

14.221.215.8:8080

guest

..... 🔒

Login

- SuperStoreUS-2015.xlsx
- visa.xlsx

Add custom instructions to create the dashboard here...

Create Dashboard Delete Files

[Click here to open the Dashboard](#)

Creating new dashboard

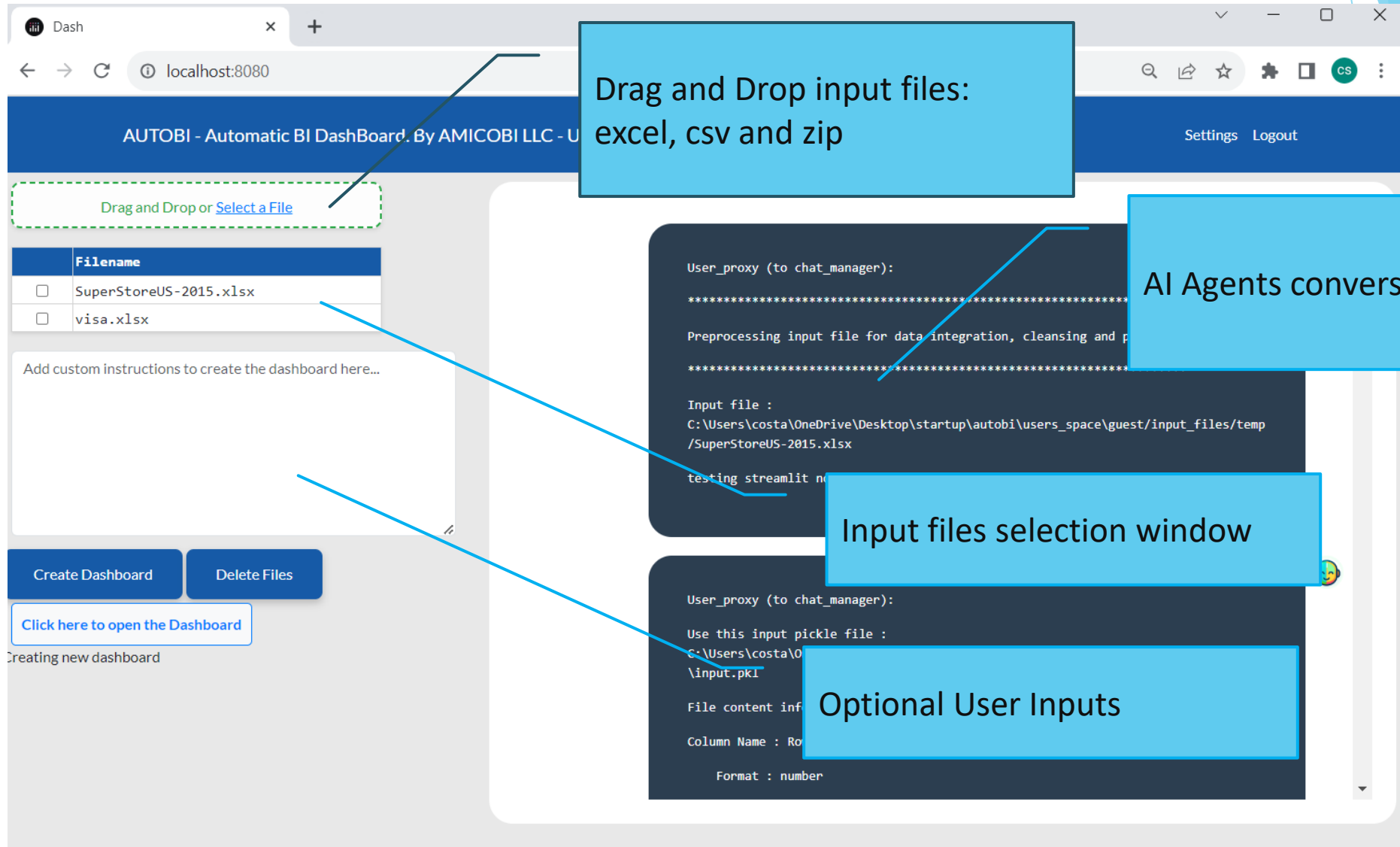
Multi users and Subscription Tiers support

COBI LLC - User : guest - User Type : standard Settings Logout

```
User_proxy (to chat_manager):
*****
Preprocessing input file for data integration, cleansing and profiling
*****
Input file :
C:\Users\costa\OneDrive\Desktop\startup\autobi\users_space\guest\input_files/temp
/SuperStoreUS-2015.xlsx
testing streamlit now
```

```
User_proxy (to chat_manager):
Use this input pickle file :
C:\Users\costa\OneDrive\Desktop\startup\autobi\users_space\guest\autobi_streamlit
\input.pkl
File content info :
Column Name : Row ID
Format : number
```

Simple and Effective layout



Drag and Drop input files:
excel, csv and zip

AI Agents conversation chatbox

Input files selection window

Optional User Inputs

Data Integration, Cleansing and Profiling

	File
<input type="checkbox"/>	visa
<input type="checkbox"/>	Supe
<input type="checkbox"/>	worl
<input type="checkbox"/>	Dati
<input type="checkbox"/>	RX.x

AUTOBI streamlines the process of integrating ,cleansing and profiling input data, ensuring accuracy and readiness for analysis.

Create Dashboard Delete Files

Add custom instructions to create the dashboard here...

Creating new dashboard

```
User_proxy (to chat manager):  
*****  
Preprocessing input file for data integration, cleansing and profiling  
*****  
Input file : /home/ec2-user/autobi/users_space/guest/input_files/temp/RX.xlsx  
New file have the same columns of the previous file used to generate the dashboard
```

```
User_proxy (to chat_manager):  
Use this input pickle file : /home/ec2-  
user/autobi/users_space/guest/autobi_streamlit/input.pkl  
File content info :  
Column Name : Level 1  
Format : string  
Min Value : D10A0 ANTIACNE TOPICI  
Max Value : TOPICAL MARKET RES
```


Input from Business Intelligence Analyst

By AMICOBI LLC - User : guest - User Type : standard

Dashboard Settings Logout



```
bianalyst (to chat_manager):  
Dashboard Title: Pharmaceutical Sales Insights  
Quadrant 1:  
Chart: Stacked Bar Chart  
X-axis: Month  
Y-axis: Sellout Volume Fact  
Filter: Level 1, Level 2, Level 3, Level 4  
Quadrant 2:  
Chart: Line Chart  
X-axis: Month  
Y-axis: Sellout Value Fact  
Filter: Level 1, Level 2, Level 3, Level 4  
Quadrant 3:  
Chart: Bar Chart  
X-axis: Level 1  
Y-axis: Sellout Volume Fact (sum)
```

Our Business Intelligence Analyst AI Agent has a crucial role in interpreting data, providing valuable insights to guide the development of the dashboard.

Development of the Dashboard

By AMICOBI LLC - User : guest - User Type : standard

[Dashboard](#) [Settings](#) [Logout](#)

Developer integrates inputs from the Business Intelligence Analyst to create and refine the dashboard, ensuring a seamless blend of analytics and user interface.

```
Coder (to chat_manager):  
  
```python  

import streamlit as st

import pandas as pd

Load the data

file_path = '/home/ec2-user/autobi/users_space/guest/autobi_streamlit/input.pkl'

data = pd.read_pickle(file_path)

Apply filter function

def apply_filters(data, level1, level2, level3, level4, month):

 filtered_data = data

 if level1:
 filtered_data = filtered_data[filtered_data['Level 1'] == level1]

 if level2:
 filtered_data = filtered_data[filtered_data['Level 2'] == level2]

 if level3:
```

# Code Review and Quality Assessment

```
q4_chart_data = filtered_data.groupby('Level 2')['Sellout Value Fact'].sum()
st.plotly_chart(q4_chart_data, kind='pie')

Bottom Table
st.subheader('Table')
st.dataframe(filtered_data, width=None, height=400)
...

```

Our AI Code Reviewer meticulously analyzes the dashboard code, providing ratings and feedback to ensure the highest standards of quality and functionality.



Critic (to chat\_manager):  
{bugs: 9, transformation: 7, compliance: 10, type: 4, encoding: 9, aesthetics: 7}

Based on the given code, here are some suggested actions to improve it:

- Bugs should be fixed, especially in the filter function where the condition is overwritten by each subsequent filter selection.
- Improve the data transformation process to ensure the appropriate transformation of the filtered data and usage of datetime as well as handling categorical data for the charts.
- Consider using Altair or Plotly library for the Donut Chart as it is not supported directly in Streamlit.

# Rigorous Code Testing

Each piece of code undergoes thorough testing to identify and rectify any bugs, ensuring a flawless and reliable dashboard for our users. In case of errors BI suggests solutions and Developer corrects the code. Then the code is tested again until it works

AUTOBI - Automatic BI DashBoard. By AMICOBI LLC

Drag and Drop or Select a File

🤖 EXECUTING CODE BLOCK

```
testing streamlit now
```

User\_proxy (to chat\_manager):

```
exitcode: 1 (execution failed)
```

Code output:

```
1. File "C:\Users\costa\AppData\Local\Programs\Python\Python311\Lib\site-packages\streamlit\runtime\scriptrunner\script_runner.py", line 534, in _run_script
 exec(code, module.__dict__)File
"C:\Users\costa\AppData\Local\Temp\tmpdf1w72f\615b294e891ad04a181a5e121f45b606", line 4, in <module>
 import matplotlib.pyplot as plt
```

🧑 bialanlyst (to chat\_manager):

It seems that running the code has resulted in an error, likely due to the use of the matplotlib library within the Streamlit environment. To ensure successful execution and integration with Streamlit, it's crucial to avoid using matplotlib directly for rendering plots in the Streamlit app. Instead, consider utilizing Streamlit's native charting functions for seamless integration. Additionally, addressing the errors related to the pie chart code and ensuring the correct approach for rendering plots in Streamlit is essential.

Coder (to chat\_manager):

```
```python
import streamlit as st
import pandas as pd
import altair as alt
```

Send a message...

AUTOBI - Automatic BI DashBoard. By AMICOBI LLC

Drag and Drop or Select a File

🤖 EXECUTING CODE BLOCK

```
testing streamlit now
```

Writing dash code to local

Directory already exists: C:\Users\costa\oneDrive\Desktop\startup\autobi\autobi_streamlit

User_proxy (to chat_manager):

```
exitcode: 0 (execution succeeded)
```

Code output:

Collaborative Regrouping: BI, Developer, and Code Reviewer

Business Intelligence , Developer, and Code Reviewer regroup for a collaborative review, ensuring that all aspects of the dashboard align perfectly.

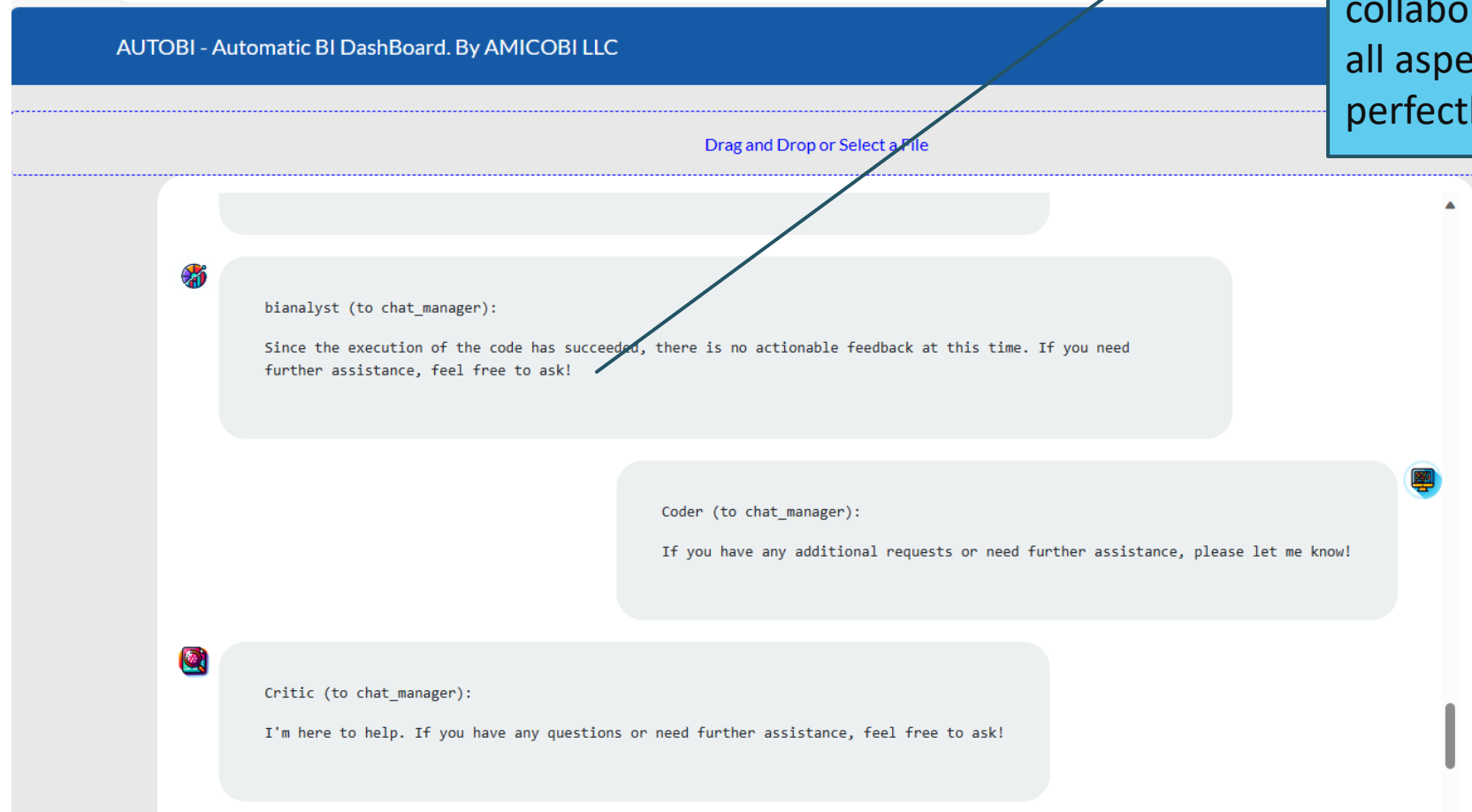
AUTOBI - Automatic BI DashBoard. By AMICOBI LLC

Drag and Drop or Select a File

bianalyst (to chat_manager):
Since the execution of the code has succeeded, there is no actionable feedback at this time. If you need further assistance, feel free to ask!

Coder (to chat_manager):
If you have any additional requests or need further assistance, please let me know!

Critic (to chat_manager):
I'm here to help. If you have any questions or need further assistance, feel free to ask!



Auto-Dashboard Creation

The screenshot displays the AUTOBI web application interface. At the top, the browser address bar shows the URL `https://44.221.215.8:8080`. The application header includes the title "AUTOBI - Automatic BI DashBoard. By AMICOBI LLC - User : guest - User Type : standard" and navigation links for "Settings" and "Logout".

On the left side, there is a file upload area with a dashed green border containing the text "Drag and Drop or [Select a File](#)". Below this is a table listing files for selection:

	Filename
<input type="checkbox"/>	visa.xlsx
<input type="checkbox"/>	SuperStoreUS-2015.xlsx
<input type="checkbox"/>	world_development_data_interpolated...
<input type="checkbox"/>	Dati MRK MERCATO ONICOMICOSI.xlsx
<input type="checkbox"/>	RX.xlsx
<input type="checkbox"/>	AutoBI.docx

Below the table are two buttons: "Create Dashboard" and "Delete Files". Underneath these is a text input field with the placeholder "Add custom instructions to create the dashboard here." and a button labeled "Click here to open the Dashboard".

The main area of the interface is a chat window. It contains several messages:

- A message from "Critic (t...)" saying "Thank you! If you have any more questions in the future, feel free to ask. Have a great day!".
- A message from "bianalyst (to chat_manager):" saying "If you have any other questions, feel free to ask!".
- A message from "User_proxy (to chat_manager):" with the text:

```
Killed streamlit process 22260  
Congratulation your dashboard is ready go to the DashBoard page
```

A blue callout box with a black border is overlaid on the chat window, containing the text: "The dashboard reaches its final stage, ready to deliver insightful and interactive data visualizations to the user." A line points from this callout box to the "Click here to open the Dashboard" button.

Auto-Generation of the Dashboard

Global Economic Indicators Dashboard



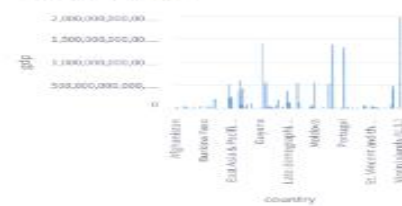
Total Population: 2,843,873,256,929

Total Labor Force: 1,025,227,744,135

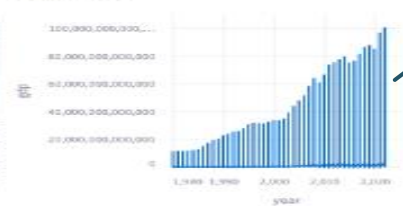
Total GDP: \$15,555,650,963,776,814.00

Average Unemployment Rate: 8.07%

Top Countries by GDP



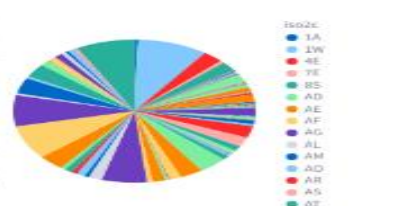
GDP Over Time



GDP vs Labor Force



Population by Country Code



	iso2c	year	country	iso3c	pop	labor_force	gdp_ppp_c	gfp_ppp	gfp
0	1A	1980	Arab World	ARB	167,707,208	None	None	None	459,804,598,51
1	1A	1981	Arab World	ARB	173,118,753	None	None	None	474,812,142,54
2	1A	1982	Arab World	ARB	178,587,926	None	None	None	444,575,870,93
3	1A	1983	Arab World	ARB	184,342,569	None	None	None	418,462,069,85
4	1A	1984	Arab World	ARB	190,162,096	None	None	None	425,899,415,74
5	1A	1985	Arab World	ARB	195,936,917	None	None	None	419,485,435,1
6	1A	1986	Arab World	ARB	201,936,517	None	None	None	406,982,702,21
7	1A	1987	Arab World	ARB	207,894,127	None	None	None	440,607,629,33
8	1A	1988	Arab World	ARB	213,455,083	None	None	None	424,896,194,41
9	1A	1989	Arab World	ARB	219,021,375	None	None	None	455,822,667,74

The culmination of our process: A customized, user-centric interactive dashboard is generated, encapsulating detailed analytics tailored to the user's needs.

Natural Language Customization

Natural Language Customization linked to specific input file

users can describe in natural language what they want to see in each section of the dashboard

The screenshot shows the settings page for AUTOBI. At the top, the header reads "AUTOBI - Automatic BI DashBoard. By AMICOBI LLC - User: autobi - User Type: premium" and includes "Home" and "Logout" links. Below the header is a table with columns for "Filename", "Date", "Open", and "High". The "TSLA.csv" file is selected. Below the table is a "KPI" section with a text input field containing "Average Daily Volume, all time High and Low". There are four "Quadrant" sections, each with a text input field for a natural language query. The "Footer" section contains a text input field with "Input data table , all columns but only 10 rows at time". An "Update Settings" button is at the bottom.

Filename	Date	Open	High
FinancialSample.xlsx	2010-06-29	19	25
visa.xlsx	2010-06-30	25.790001	30.42
food.xlsx	2010-07-01	25	25.92
SuperStoreUS-2015.xlsx	2010-07-02	23	23.1
TSLA.csv	2010-07-06	20	20
	2010-07-07	16.4	16.629999
	2010-07-08	16.139999	17.52
	2010-07-09	17.58	17.9
	2010-07-12	17.950001	18.07
	2010-07-13	17.389999	18.639999

KPI

Average Daily Volume, all time High and Low

Quadrant 1

Bar chart of Sum o Volume by Year/Month

Quadrant 2

Trend Chart of Average Close by Year/Month

Quadrant 3

Trend Chart of Average Volume by Year/Month

Quadrant 4

Trend Chart of Average Pct by Year/Month where Average Pct is the computed as ((Close at the end of the month - Open at the beginning of the month) / Open at the beginning of the month) * 100

Footer

Input data table , all columns but only 10 rows at time

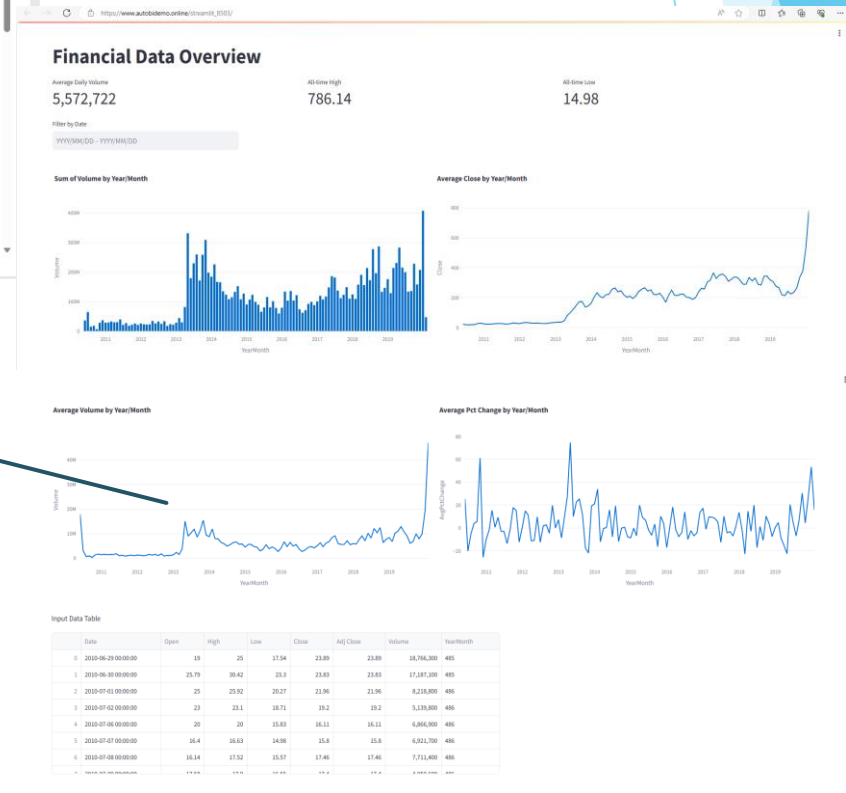
Update Settings

Generation of the Customized Dashboard

The screenshot shows the AUTOBI web interface. At the top, it says "AUTOBI - Automatic BI Dashboard. By AMICOBI LLC - User : autobidemo - User Type : premium". On the left, there is a "Drag and Drop or Select a File" area with a list of files: FinancialSample.xlsx, visa.xlsx, food.xlsx, SuperStoreUS-2015.xlsx, and TSLA.csv. Below this is a text area for "Add custom instructions to create the dashboard here...". On the right, a chat window shows a message from "bianalyst (to chat_manager):" with instructions for dashboard layout, including title, KPIs, and quadrant specifications.

Once a Natural Language Setting is saved, the system will automatically apply it. The Business Intelligence AI Agent then interprets the instructions and activates the necessary requirements for the coder.

The Coder, Tester, and Critic AI Agents collaborate as a team to create the dashboard, ensuring it aligns with Business Intelligence (BI) inputs and ultimately reflects user feedback



Thank You

Contact us at : info@autobi.io

Visit our Web Site : <https://autobi.io>