**Synapti-Q**

**Feature – Api end points and data sets with one liner**

**First point you see in demo video –**

Speech-to-Text Integration (STT)

Text-to-Speech (TTS) for AI Responses

**Chatbot is capable to voice input and voice response with text as well**

**End points🡪**

**1. General Utility Endpoints**

**/**customer-ids/ - Fetch Customer IDs

* Returns a list of available customer IDs from the banking dataset.
* Uses limit parameter to restrict the number of IDs returned.

/loan-customer-ids/ - Fetch Loan Customer IDs

* Retrieves customer IDs related to loans and also generates AI-powered financial insights.
* Calls generate\_ai\_loan\_insight() to analyze loan repayment options, credit score improvements, and refinancing potential.

**2. Financial Advisory and Personalization Endpoints**

/financial/{customer\_id} - Financial Advice

* Retrieves ML-based financial suggestions for a customer based on features like age, income, and credit score.
* Calls AI to generate additional personalized financial advice.
* Includes optional social media and loan analysis.

**/personalized-advice/{customer\_id} - AI-Driven Social Media & Sentiment Advice**

* Uses customer feedback and engagement data to generate financial advice.
* Calls an AI API to create a concise recommendation.

**3. AI-Powered Risk and Fraud Detection**

**/fraud/{transaction\_id} - Fraud Detection**

* Predicts whether a transaction is fraudulent using an XGBoost fraud detection model.
* SHAP explainability is used to show feature importance in fraud prediction.
* AI generates a fraud advisory.

**/churn/{customer\_id} - Customer Churn Prediction**

* Uses XGBoost to predict if a customer is at risk of leaving the bank.
* Calls AI to analyze sentiment and behavioral patterns.
* Combines AI and ML predictions for final risk assessment.

**4. Loan and Credit Analysis**

**/loan/{customer\_id} - Loan Analysis & AI-Driven Recommendations**

* Retrieves loan details and predicts loan approval using ML.
* AI generates a financial report on the customer's loan status, debt-to-income ratio, and risk.

**5. Consent and Compliance**

**/consent/{customer\_id} - Set User Consent**

* Allows customers to opt-in or opt-out of AI-based financial predictions.
* Stores consent status with a timestamp.

**/consent/{customer\_id} (GET) - Check Consent**

* Returns whether a user has given consent for AI predictions.

**6. AI-Powered Document Processing**

**/classify-image/ - Image-Based Financial Document Processing**

* Extracts transaction data from uploaded images (e.g., receipts, bank statements).
* Uses AI to categorize spending and generate financial advice.

**7. Additional Predictions & Analysis**

**/subscription/{customer\_id} - Subscription Spending Prediction**

* Predicts if a customer is likely to cancel a subscription.

**/wealth/{customer\_id} - Risk Appetite Prediction**

* Predicts the customer's risk tolerance for investments.

**/business/{business\_id} - Business Profit Margin Prediction**

* Estimates a business's expected profit margin based on financial data.

**/market/{business\_id} - Market Cost Prediction**

* Predicts customer acquisition costs for businesses.

**8. Chatbot and Voice-Based AI Features**

**/chatbot/ - AI Chatbot for Financial Assistance**

* Accepts a **query** (customer request) and optionally a **customer ID**.
* Automatically detects **Transaction ID, Customer ID, or Business ID** in natural language.
* Uses AI-powered Natural Language Processing (NLP) to:
  + Provide **financial insights** (spending analysis, loan advice, investment suggestions).
  + Detect fraud and transaction anomalies.
  + Give **real-time, personalized recommendations** based on customer data.
* If an ID is found, the chatbot fetches relevant customer/business insights and **enhances them using AI**.
* Uses a **fallback model** when the AI service is unavailable.
* **Response Formatting:**
  + Uses **tables for structured data** (financial breakdowns).
  + Returns **actionable insights** in bullet points.

Datasets snippets with few example columns – We have create 10000 records for each dataset that covers multiple aspects.

For example –

**1. Synthetic Banking Data (synthetic\_banking\_data.csv)**

**Description:**

This dataset contains financial and transactional data of customers. It includes personal details, spending behaviour, and AI-powered financial recommendations.

Key Fields & Example Data:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Customer\_ID,Age,Gender,Income,Location,Last\_Transaction,Frequent\_Merchant,Average\_Monthly\_Spend,Social\_Media\_Platform,Engagement\_Score,Customer\_Feedback,Review\_Score,Credit\_Score,Existing\_Loans,Loan\_Offer,Food\_Expense,Entertainment\_Expense,Bills\_Expense,Savings\_Expense,Fraud\_Score,Financial\_Advice,Investment\_Profile  Example row - CUST-0005,37,Male,2424181,Jaipur,1693,Reliance Digital,32345,LinkedIn,60,Neutral,2,835,2,Credit Card Offer,4714,5029,49059,37612,74,Invest in Mutual Funds,Fixed Deposits  2. Synthetic Fraud Detection Data (synthetic\_fraud\_detection.csv)  Description:  This dataset contains records of financial transactions with fraud risk analysis. It includes transaction details, customer history, and AI-predicted fraud labels.  Column names with an example row-  Transaction ID,Customer ID,Transaction Amount,Transaction Type,Location,Device Used,Transaction Time,Historical Fraud Flag,**Risk Score,**Fraud Label  8ace0fc6-8d17-49b8-b361-db57d12e90df,CUSTFRAUD-2235,6771.57,Online Purchase,India,Tablet,2024-02-22 19:55:56,1,**0.82,**1  3. Loan & Credit Analysis Data (loan\_credit\_analysis.csv)  Description:  This dataset contains loan-related financial data, including customer demographics, credit score, existing loans, and AI-predicted loan approval.  Column names with an example row-  customer\_id,age,income,employment\_status,credit\_score,existing\_loans,loan\_amount\_requested,loan\_purpose,**loan\_approval\_status,**debt\_to\_income\_ratio,loan\_interest\_rate,loan\_term,default\_risk  d0abbfa2,31,42363,Full-time,590,3,475993,Education,**Approved,**0.36,3.0,60,Low  **4. Subscription Spending Data (subscription\_spending\_patterns.csv)**  **Description:**  This dataset contains customer subscription services, monthly spending, and cancellation probability.  Column names with few rows example –  Customer\_ID,Subscription,Monthly\_Fee,Spending\_Category,Monthly\_Spending,Cancel\_Probability  CUSTS-4731,Amazon Prime,21.07,Shopping,135.19,0.55  CUSTS-5269,Hulu,5.15,Shopping,183.42,0.66  CUSTS-6878,Amazon Prime,25.96,Food,121.46,0.74  CUSTS-1040,Apple Music,9.95,Healthcare,327.2,0.1  **5. Wealth Management Data (synthetic\_wealth\_management.csv)**  **Description:**  This dataset contains information about customer wealth, risk appetite, and investment preferences.  Column names with few rows example –  Customer\_ID,Net\_Worth,Annual\_Income,Risk\_Appetite,Primary\_Investment,Secondary\_Investment,Savings\_Percentage,Debt\_to\_Income\_Ratio,**Retirement\_Fund,**Preferred\_Advisor  CUSTW-00001,4004131.32,140280.63,Moderate,Mutual Funds,Gold,12.78,0.13,**386074.43,**Robo-Advisor  CUSTW-00002,957683.28,82428.44,Moderate,Mutual Funds,Stocks,22.79,0.98,**752921.64,**Robo-Advisor  **6.** Business Financials Data (business\_financials.csv)  Description:  This dataset contains financial insights for businesses, including revenue, profit margins, and social media presence.  Key Fields & Example Data:   | Column Name | Data Type | Description | Example Value | | --- | --- | --- | --- | | business\_id | String | Unique business identifier | "BUS-00001" | | annual\_revenue | Float | Total annual revenue | 1200000.00 | | annual\_expenses | Float | Total annual expenses | 900000.00 | | profit\_margin | Float | Profit margin percentage | 25.0 | | credit\_score | Integer | Business credit score | 720 | | loan\_amount | Float | Outstanding loan amount | 50000.00 | | **7. Market Insights Data (market\_insights.csv)**  **Description:**  This dataset contains market growth rates, competition analysis, and customer acquisition costs.  **Key Fields & Example Data and few columns:**   | **Column Name** | **Data Type** | **Description** | **Example Value** | | --- | --- | --- | --- | | business\_id | String | Business identifier | "MKT-00001" | | industry\_growth\_rate | Float | Market growth rate (%) | 5.6 | | competitor\_count | Integer | Number of competitors | 250 | | customer\_acquisition\_cost | Float | Cost per acquired customer | 120.50 | |  |  |  | |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |