BOB Hackathon

Ideation Stage / Concept

Prepared by: **Team Nerd Byte**

❖ Team Details:

Name	Photo	College
Bhalala Zankar		PDPU, Gandhinagar.
Borad Jash		GCET, V.V Nagar, Anand.

❖ Table of Contents:

1) Problem Statement:

Financial Advisory

- ➢ **Objective**
  - To revolutionize financial advisory services using generative AI to provide personalized, data-driven financial advice to customers.
- ➢ **Challenge**
  - Analyze customer financial data and market trends to generate tailored investment strategies.
  - Offer real-time advisory services that adapt to changing financial conditions and customer goals.
  - Ensure transparency and explainability in the AI-driven advisory process to build customer trust and confidence.

2) Introduction:

❖ Overview of Generative AI:

- Generative AI is Branch of Artificial Intelligence Focused on creating original content autonomously. Unlike traditional AI which follows specific instructions or analyzes data to make the decision, generative AI uses algorithm trained on large datasets to produce new output that mimic human- created content.

❖ **Importance of AI in Financial Advisory**:

- AI has revolutionized financial advisory by enhancing data analysis, risk management, and personalized advice. It quickly analyzes data to identify trends, predicts market movements accurately, and tailors recommendations based on clients' financial goals and risk preferences. Automation simplifies routine tasks, detects fraud, and ensures compliance with regulations, making financial advice more efficient and secure.

3) Application of the Generative AI in Financial Advisory:

- AI in financial advisory uses data for trends, manages risks, gives personalized advice, automates tasks, predicts markets, detects fraud, and ensures compliance.

1) Data Analysis: AI analyzes large amounts of financial data quickly to find patterns and trends.

2) Risk Management: AI assesses risks by analyzing historical data and market conditions.

3)Personalized Advice: AI provides tailored recommendations based on individual financial goals and risk tolerance.

4) Automation: AI automates routine tasks like portfolio management and client communication.

5) Predictive Insights: AI predicts market movements and investment performance more accurately.

6) Fraud Detection: AI identifies suspicious activities by analyzing transaction patterns in real-time.

7) Regulatory Compliance: AI helps financial advisors stay compliant with evolving regulations.

4) Implementation of the machine learning model:

- Implementing ML in financial advisory: gather data, select features, choose algorithms, train, validate, deploy for predictions, and monitor for accuracy and updates.

1) Data Collection and Preparation:

  - Gather relevant financial data and ensure it is clean and accurate.

  - Prepare data by transforming and normalizing it for analysis.

2) Feature Selection:

  - Identify key variables (features) that influence financial outcomes.

  - Select the most relevant features for analysis and prediction.

3) Algorithm Selection:

  - Choose appropriate ML algorithms (e.g., regression, decision trees, neural networks) based on the advisory needs and data characteristics.

4) Model Training:

  - Train the selected ML model using historical data to learn patterns and relationships.

  - Optimize the model parameters to improve accuracy and performance.

5) Validation:

  - Validate the trained model using separate datasets to ensure it generalizes well to new data and real-world scenarios.

6) Deployment:

  - Deploy the validated ML model into the advisory process to assist in making predictions or providing recommendations.

  - Integrate the model outputs into decision-making frameworks.

7) Monitoring and Maintenance:

  - Monitor the model's performance continuously to ensure it remains accurate and effective.

  - Update the model periodically with new data and adjust parameters as needed to reflect changing market conditions or client requirements.

5) Challenges and Consideration:

❖ Challenges:

- In financial advisory, challenges include regulatory compliance, cybersecurity, market risks, technology integration, client expectations, ethics, and competition.

1) Regulatory Compliance: Adhering to complex and evolving financial regulations.

2) Cybersecurity: Protecting client data and ensuring secure transactions.

3) Market Risks: Managing volatility and mitigating financial risks effectively.

4) Technology Integration: Adopting and leveraging new technologies like AI and ML.

5) Client Expectations: Meeting diverse client needs for personalized advice and service.

6)Ethical Standards: Upholding integrity and transparency in financial practices.

7) Competition: Differentiating services and staying ahead in a competitive market.

❖ Considerations:

- In financial advisory, key considerations include meeting client needs, managing risks, integrating technology, complying with regulations, upholding ethics, adapting to market conditions, and staying competitive in the industry.

1) Client Needs: Understanding and addressing diverse client financial goals and preferences.

2) Risk Management: Developing strategies to manage and mitigate financial risks effectively.

3) Technological Advancements: Adopting and integrating new technologies to enhance advisory services.

4) Regulatory Environment: Staying compliant with changing regulations and guidelines.

5)Ethical Practices: Upholding ethical standards and prioritizing client interests.

6) Market Conditions: Monitoring and adapting to fluctuating economic and market conditions.

7) Competitive Landscape: Differentiating services and maintaining a competitive edge in the industry.

6) Technology to be Used:

• Front-End

1) HTML/CSS: Basic structure and styling of your website.

2) JavaScript: For adding interactivity.

3) React.js: Easy-to-use library for building dynamic user interfaces.

- ## Back-End

1) Node.js with Express.js: Simple and powerful for building the server-side logic.

2) Python with Flask: If you prefer Python, Flask is lightweight and easy to learn.

- ## Database

1) Azure SQL Database: Fully managed relational database service.

2) Cosmos DB: Azure's NoSQL database, great for flexibility in data structure.

- ## Generative AI

1) Azure OpenAI Service: Integrate OpenAI's GPT-4 model through Azure, simplifying API management and billing.

2) Azure Machine Learning: If you need to build custom AI models, this service provides tools and infrastructure.

- ## Data Analysis and Market Trends

1) Pandas and NumPy: For data analysis in Python.

2) Azure Synapse Analytics: Unified analytics service to analyze large amounts of data.

- ## Real-Time Services

1) Azure SignalR Service: Easily add real-time web functionalities.

2) Azure Functions: Serverless computing to run event-driven code.

• Transparency and Explainability

1) Azure Machine Learning Interpretability: Tools for understanding model predictions.

• DevOps and Deployment

1) Azure DevOps: Full suite of DevOps services including CI/CD pipelines.

2) Azure App Service: For deploying web apps easily.

• Additional Tools

1) GitHub: Integrated with Azure DevOps for version control.

2) Visual Studio Code: Powerful and beginner-friendly code editor with Azure integrations.

• Simplified Workflow

1) Set up your front-end with React.js: Use Create React App to quickly scaffold your project.

2) Develop your back-end with Node.js and Express.js: Set up RESTful APIs to handle client requests.

3) Use Azure SQL Database: Store user data securely.

4) Integrate Azure OpenAI Service: Call the GPT-4 API for generating financial advice.

5) Deploy your app with Azure App Service: Simplifies deployment and management.

7) Methodology for making website:

1) Planning:

  - Define objectives and functionalities.

  - Identify stakeholders and their needs.

2) Designing:

  - Create wireframes using tools like Figma.

  - Design the UI/UX for a smooth user experience.

3) Setup Development Environment:

  - Install Node.js, React.js, and necessary libraries.

  - Set up your code editor (e.g., Visual Studio Code).

4) Front-End Development:

  - Build the user interface using React.js.

  - Style the components with CSS or a framework like Bootstrap.

5) Back-End Development:

  - Set up a server using Node.js and Express.js.

  - Implement RESTful APIs to handle data requests.

6) Database Integration:

  - Use Azure SQL Database or Cosmos DB for storing data.

  - Connect the database with your back-end.

7) AI Integration:

  - Integrate Azure OpenAI Service for generating financial advice.

  - Implement real-time data analysis using Azure Machine Learning.

8) Deployment:

  - Deploy the website using Azure App Service.

  - Set up continuous integration and delivery (CI/CD) with Azure DevOps.
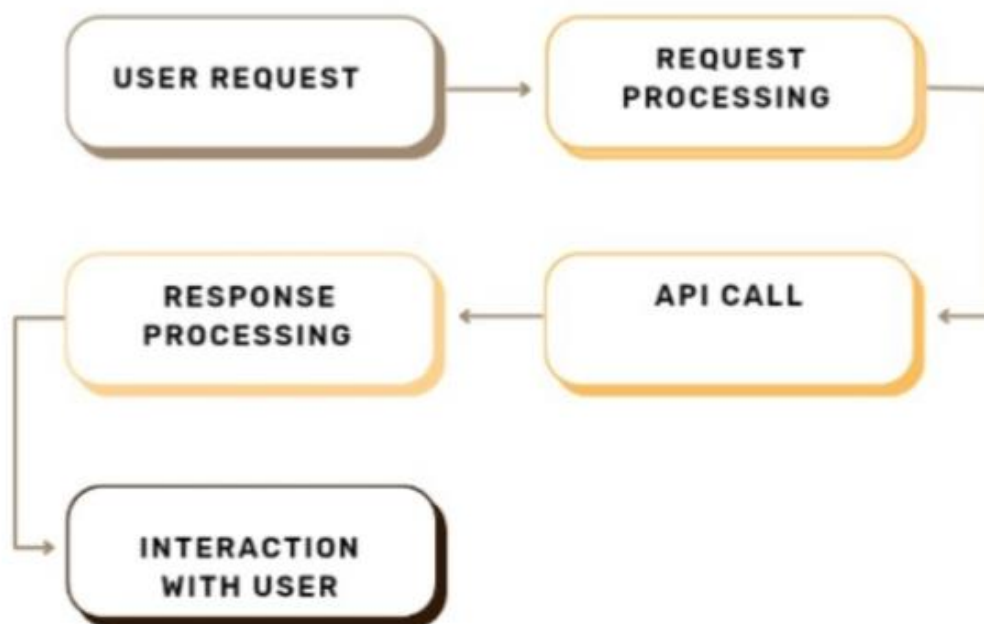
9) Testing:

  - Perform thorough testing to ensure functionality and user experience.

  - Fix any bugs or issues that arise.

10) Launch:

  - Make the website live for users.

  - Monitor and gather feedback for further improvements.

➤ Complete description of all the logical steps involved in working of website:

1) Working of The Chatbot:

❖ Flow Chart Description:

1) User Input:

- The user initiates a request or query through the website interface.

- Example: "What are some investment strategies for 2024?"

2) Request Processing:

- The user's input is sent to the backend server of the website.

- The server ensures the input is in the correct format and may pre-process the data if needed.

3) OpenAI API Call:

- The pre-processed input is sent to the OpenAI API.

- This involves making an API request to OpenAI's endpoint with the user's query.

4) Generative AI Response:

- The OpenAI API processes the input using the LLM and generates a response.

- The LLM uses its training data to provide a relevant and coherent answer to the user's query

5) Response Processing:

- The server receives the response from the OpenAI API.

- Post-processing may occur to format the response or to integrate it with other data sources.
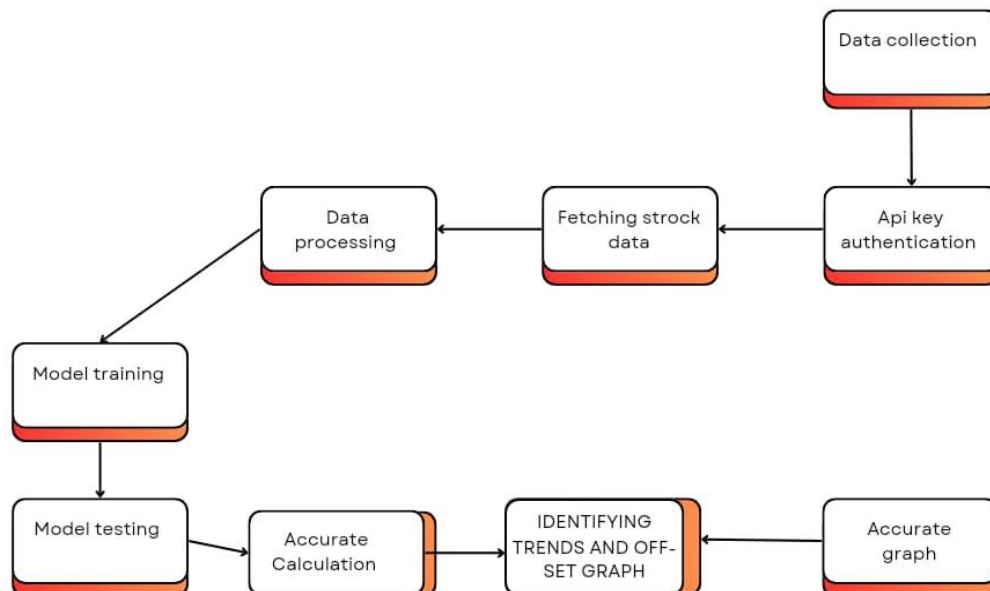
6) Display to User:

- The processed response is sent back to the website's frontend.

- The response is displayed to the user on the website interface.

7) User Interaction Logging:

- Each interaction is logged for future reference or analysis.

- This log can be used to improve the system or for auditing purposes.

2) Working of the Stock Prediction:

❖ Flow Chart Description:

1) Data Collection: Get historical stock data for NA100 and NA200 using an API key.

2) API Key Authentication: Securely verify access to the stock data API with your API key.

3) Fetch Stock Data: Retrieve past prices and trading volumes of the selected indices.

4) Data Preprocessing: Prepare data by cleaning it up, organizing it, and splitting it for training and testing.

5 Model Training: Choose and teach a good model (like LSTM or ARIMA) with your training data.

6) Model Evaluation: Test how well your model predicts with your testing data.

7) Accuracy Calculation: Figure out how accurate your model's predictions are.

8) Prediction: Make predictions about where stock prices are going based on what your model has learned.

9) Identify Trends: Look at your predictions to see if stocks might go up or down.

10) Visualization: Make pictures or graphs of your model's guesses and how accurate they are.

11) Offset Plot Graph: Show how your guesses compare to the real prices in a graph.

12) Accuracy Graph: Make a graph to show how sure you can be about your model's predictions.

3) Working of the Image processing:
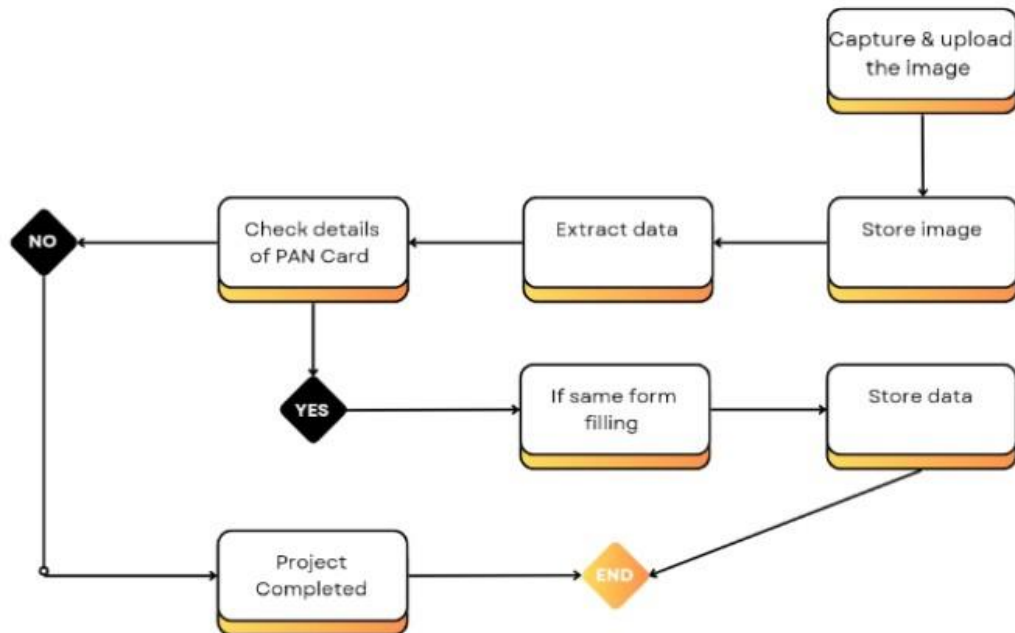
❖ Flow Chart Description:

1) Capture Image: Use a webcam to capture the image of the user's Aadhaar card.

2) Store Image: Save the image securely in a designated location.

3) Extract Data: Use optical character recognition (OCR) or a similar technology to extract data from the image.

4) Check for PAN Card: Prompt the user to input PAN card details.

5) Compare Details:

   - If Same: Proceed to fill the form.

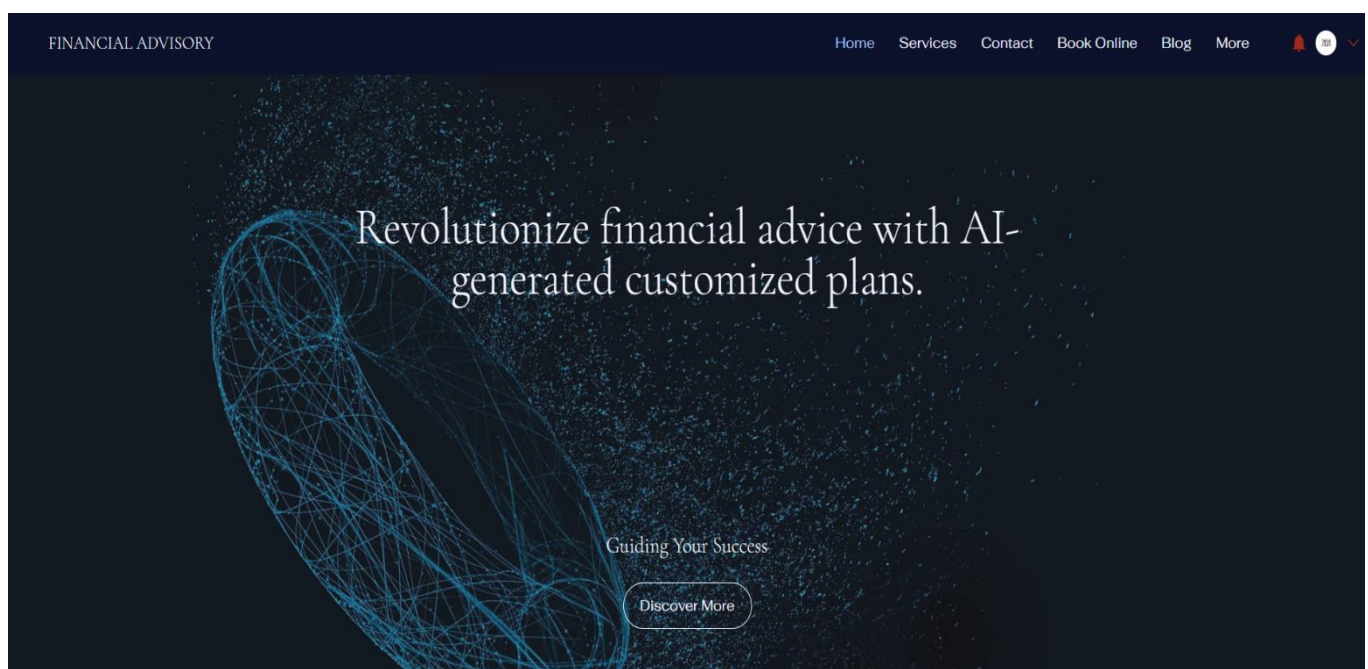   - If Different: Notify the user of the discrepancy and halt the process.

6) Fill Form: Populate a CSV file with the extracted Aadhaar and PAN card details.

7) Store Data: Save the filled CSV file in a secure storage location.

8) End: Finish the process.

8) Proposed Design:

- Some sample design of the our website.

UNIQUE OFFERINGS

Customized Solutions

At Financial Advisory, we believe every business can thrive. Join our satisfied
clients and discover what makes us stand out from the rest.

COMPREHENSIVE ANALYSIS

Meeting Your Needs

Dedicated to your success, we at Financial Advisory
go above and beyond to guide you towards growth
and success while keeping your objectives in focus.

INDIVIDUALIZED SUPPORT

Setting the Standard

Partner with us to see the difference personalized
attention and exceptional guidance can make for your
business.

EXPERT ADVICE

Tailored Solutions

Experience top-notch service with Financial Advisory.
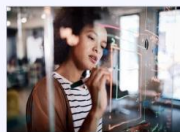We focus on simplifying your business operations for
maximum efficiency.

INDUSTRY BENCHMARK

Excellence in Service

Benefit from our high standards, expert staff, and
cutting-edge features. Join us in simplifying your
business operations.

FINANCIAL ADVISORY   Home   Services   Contact   Book Online   Blog   More

Our Services

Investment Strategy Consultation

1 hr 30 min
$100

Book Now

Financial Health Check

1 hr
$75

Book Now

Credit Score Analysis

30 min
$50

Book Now

FINANCIAL ADVISORY

123-456-7890
Info@mysite.com

500 Terry Francine
Street, 6th Floor, San
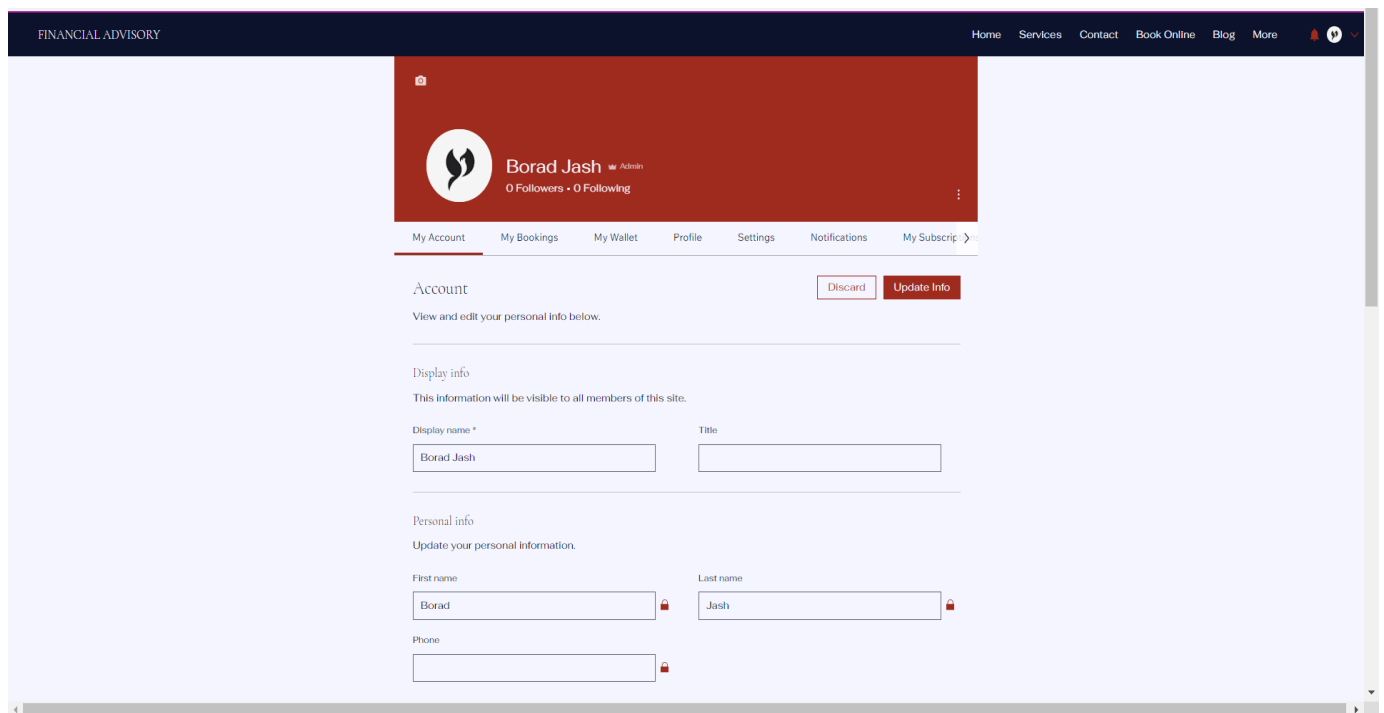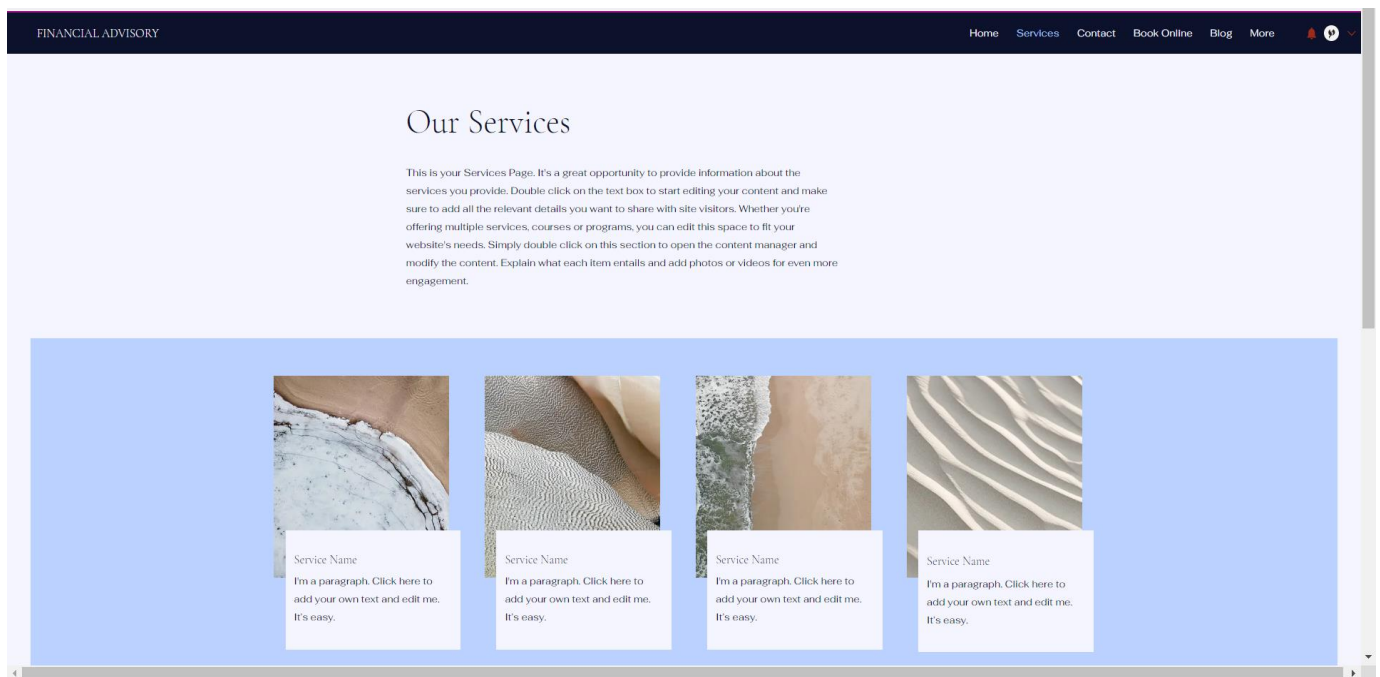
9) Case Studies:

- Simple Case Studies on AI in Financial Advisory Services

1) Wealthfront:

-Goal: Give personalized investment advice automatically.

-How: Uses AI to analyze your finances, optimize your investments, and save on taxes.

-Result: Manages lots of money for many clients, offering good advice at a low cost.

2) Betterment:

-Goal: Provide tailored investment strategies and advice.

-How: Uses AI to manage investments and adjust plans based on your financial data.

-Result: Happier customers with better investment returns.

3) Charles Schwab Intelligent Portfolios:

-Goal: Offer automated investment management with human help.

-How: Uses AI to manage investments and provides access to human advisors for personal advice.

-Result: Combines the efficiency of AI with human touch, increasing customer trust.

10) Conclusion:

- The objective of revolutionizing financial advisory services using generative AI aims to provide personalized, data-driven financial advice to customers. This ambitious goal faces several challenges, including:

1) Analyzing Customer Data and Market Trends: Generating tailored investment strategies by thoroughly analyzing individual financial data and current market conditions.

2) Real-Time Advisory Services: Offering adaptive, real-time advisory services that respond to changing financial situations and customer goals.

3) Transparency and Explainability: Ensuring that AI-driven advice is transparent and easily understood by customers, building trust and confidence in the service.

THANK YOU