AI Financial Advisor – Finwise

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Project Guide
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Outline

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- Literature Survey of the existing systems

- Limitations of the existing systems

- Problem statement

- System Design

- Technologies and methodologies

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Introduction

- **Managing personal finance is challenging**
  Balancing savings, investments, and daily expenses needs planning and discipline.

- **Difficulty in tracking income, expenses, assets, and liabilities**
  People often fail to record all earnings, spending, assets, and debts accurately.

- **AI Financial Advisor project**
  It reads financial documents automatically and evaluates overall financial health with useful insights.

Introduction

➢ **Objectives:**

- To allow users to upload financial documents and automatically extract key financial insights using data parsing.

- To assess a user's income, expenses, assets, and liabilities through standard financial metrics for evaluating financial performance and risk.

- To assist users in making major financial decisions by calculating affordability and providing personalized recommendations using ML.

- To provide an intelligent Q&A interface where users can ask financial questions, and receive AI-driven, context-aware advice.

Literature Survey of the existing system

Sr. No.	Title	Author(s)	Year	Outcomes	Methodology	Result
1.	[1] Robo-Advisors: A Review of the Literature.	Alsabah, C., Capponi, A., & Lacedelli, O. R.	2021	Development of robo-advisors - Benefits (e.g., cost efficiency, accessibility) - Challenges (e.g., regulatory compliance, risk management)	- Systematic review of existing literature on robo-advisors - Analysis of robo-advisor platforms and their features	- Robo-advisors offer cost-effective and accessible financial advice - Challenges include ensuring regulatory compliance and managing risk.
2.	[2] Machine Learning in Financial Risk Management: A Review	Leo, M., Sharma, S., & Maddulety, K.	2019	- Applications of machine learning in credit risk assessment - Use of machine learning for market risk assessment and prediction	Review of existing literature on machine learning applications in financial risk management - Analysis of machine learning algorithms and their performance	- Machine learning can improve credit risk assessment and market risk prediction - Techniques like neural networks and decision trees show promising results

Literature Survey of the existing system

Sr. No.	Title	Author(s)	Year	Outcomes	Methodology	Result
3.	[3] Artificial Intelligence in Finance: A Review	Dixon, M. F., & Klabjan, D..	2020	- Overview of AI applications in finance (e.g., trading, portfolio management) - Discussion of benefits and challenges of AI adoption	- Comprehensive review of AI applications in finance - Analysis of AI techniques and their financial applications.	- AI has transformative potential in finance - Challenges include ensuring transparency, fairness, and accountability

Limitations of existing systems

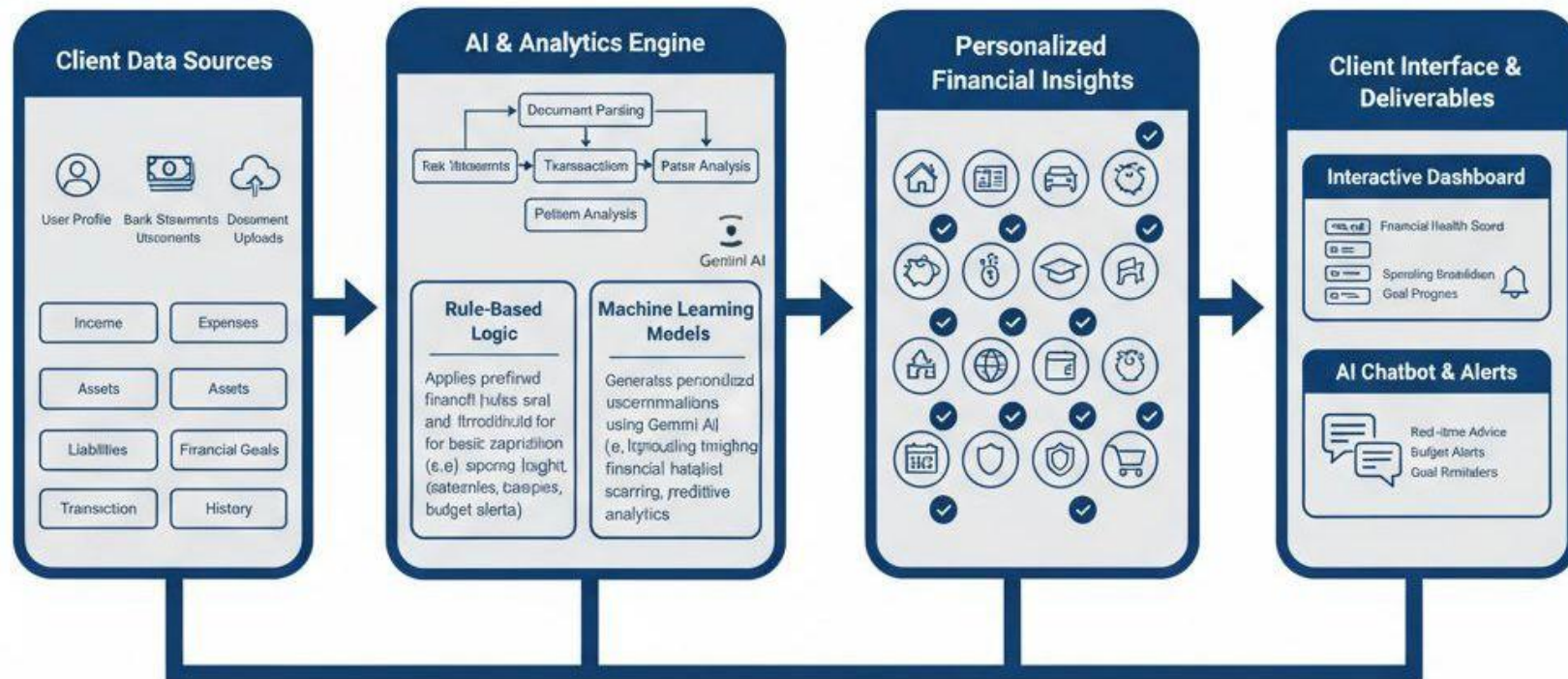From the literature review of existing systems, we find that :

- **Limited Personalization:** Existing systems don't adapt well to sudden or unique financial life changes.

- **Dependence on Historical Data:** Heavy reliance on past data makes recommendations unreliable for new or irregular users.

- **Niche Investment Overlooked:** Most systems ignore non-traditional investment options like real estate micro-investments or alternative assets.

- **Over-reliance on quantitative metrics:** Many tools focus too much on numbers like ROI or risk score and ignore personal goals or ethical preferences.

Problem statement

- Individuals often face difficulties in managing their personal finances because there are no automated and intelligent tools to assist them.

- There is a need for a system that can automatically extract key insights from various financial documents.

- Such a system should be able to analyze financial performance using standard financial metrics.

- It should also guide users in making better and more informed financial decisions.

System Design

FinAI - AI Financial Advisor System Architecture

Technologies

- **Data handling and analysis**: ML
- **Financial data processing:** CSV uploads
- **Visualisation:**   D3.js
- **Integration**: APIs for financial info
- **Frontend Development:**

  i.   HTML,CSS, javascript

- **Backend Development:**

  i.   Supabase

Methodology

1. **Data Collection**:

   User uploaded financial csvs(income, expenses, savings,investments)

   ˙ User inputs(age, lifestyle, hobbies for personalized advice).
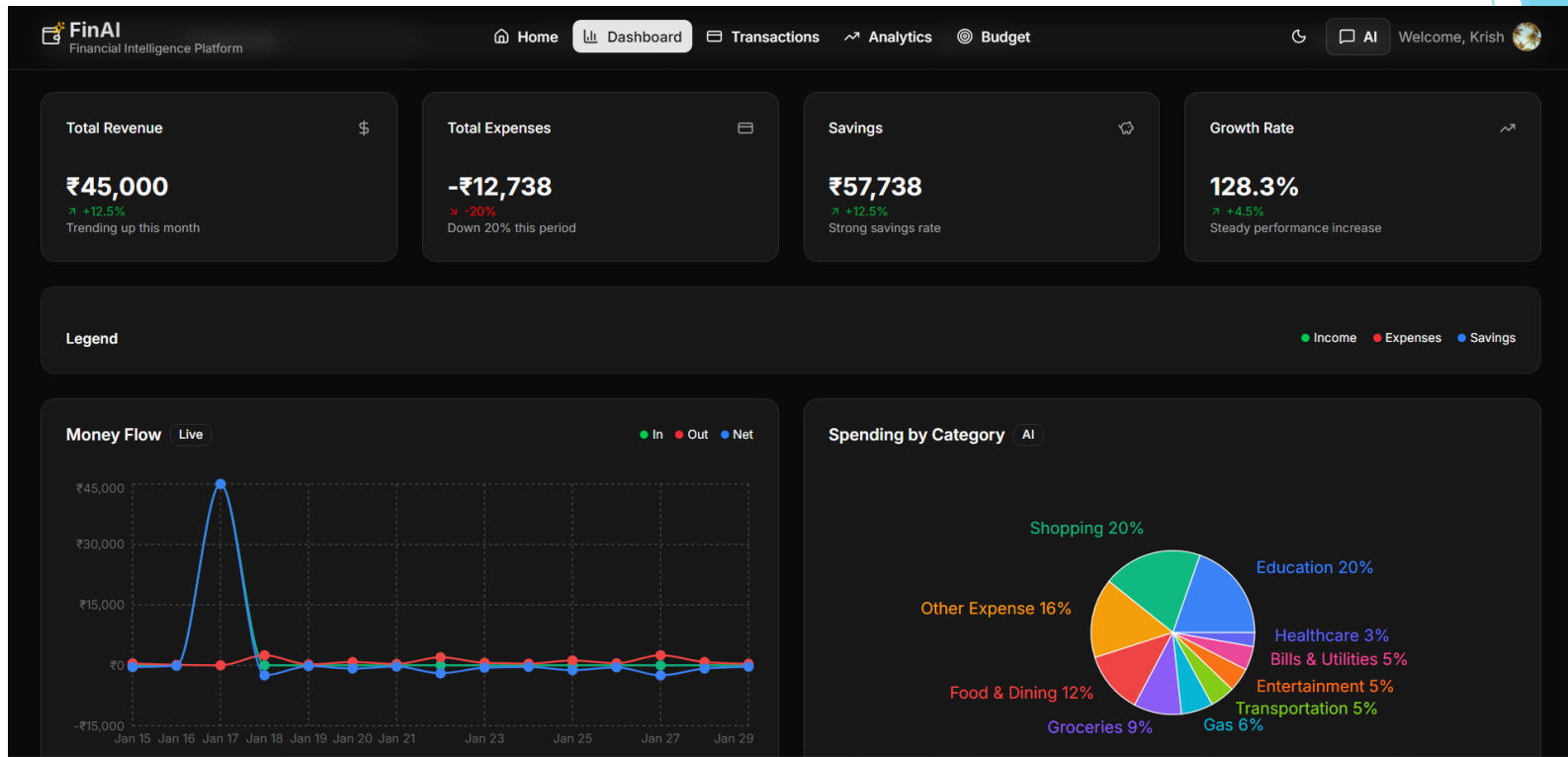
1. **Data Cleaning and Preprocessing:**

   a) CSV processing(pandas): handle missing values, format numeric values, remove inconsistencies

   b) Use inputs: standardize lifestyle and hobbies into categorical features for better advice

2. **Feature Engineering:** Savinsgs rate, monthly/quarterly spending patterns

3. **Algorithm Selection:** (ML): Generate financial summaries in plain text

4. **Model Training and Evaluation :** Compared predicted vs actual outcomes for recommendation accuracy.

Implementation

FinAI
Financial Intelligence Platform

AI Assistant AI ✕

Save Money	Analyze
Health	Budget
Tips	Goals

🤖

AI Financial Assistant

Ask me anything about your finances!

↗ Improve Financial Health

📊 Analyze Spending

◎ Create Budget

Ask about your finances... ➤

✨ AI-Powered   Press Enter to send

Transaction Management

View, manage, and analyze all your financial transactions

Total Income ↗
₹45,000
1 transactions

Total Expenses ↘
₹12,738
14 transactions

Net Savings $
₹32,262
Positive balance

Search & Filter

Find specific transactions quickly

🔍 Search transactions, categories, or merchants...   ▽ Type: All   🏷 Category: All

All Transactions (15)   Page 1 of 2   15 of 15

↘ **Medicine Purchase**   **-₹350**
Healthcare • 1/29/2024   85% confidence

Transactions   + Add

Med... [expense] -$-350   ✎ 🗑
📅 1/29/2024 🏷 Healthcare

Conclusion

• Built a working prototype that can automatically parse   financial data from different documents and evaluate financial performance using standard metrics.

• Established a strong foundation for providing personalized financial recommendations as outlined in Objective 3.

• Prepared the system for future integration of an AI-driven question-and-answer interface as planned in Objective 4.

References

[1] Leo, Martin; Sharma, Suneel; Maddulety, K. "Machine Learning in Banking Risk Management: A Literature Review." *Risks*, 2019, 7(1), 29. https://www.mdpi.com/2227-9091/7/1/29

[2] Alsabah, Humoud; Capponi, Agostino; Ruiz Lacedelli, Octavio; Stern, Matt. "Robo-advising: Learning Investors' Risk Preferences via Portfolio Choices [Mean-variance versus Full-scale Optimisation: In and out of Sample]." *Journal of Financial Econometrics*, 2021, Vol. 19, No. 2, 369-392. https://doi.org/10.1093/jjfinec/nbz040

[3] Deku, S. Y.; Kara, A.; Semeyutin, A. "Artificial intelligence in Finance: a comprehensive review through bibliometric and content analysis." *SN Business & Economics*, 2024, 4:23. Published 20 January 2024.
https://link.springer.com/article/10.1007/s43546-023-00618-x

Thank You!!