InSight Bulletin: A Multidisciplinary Interlink International Research Journal
Peer Reviewed International, Open Access Journal.
ISSN : 3065-7857 / Website: https://ibrj.us / Volume-3, Issue-2 / February - 2026

Original Article

Nivesh AI: AI-Powered Investment Insights for Smarter Financial Decisions

Shreya Kishor Pawar
Department of Computer Science, ATSS College of Business Studies and Computer Application, Pune, India

Manuscript ID:
IBMIIRJ -2026-030238

Submitted: 09 Jan. 2026

Revised: 13 Jan. 2026

Accepted: 07 Feb. 2026

Published: 28 Feb. 2026

ISSN: 3065-7857

Volume-3

Issue-2

Pp. 181-186

February 2026

Correspondence Address:
Shreya Kishor Pawar
Department of Computer Science, ATSS College of Business Studies and Computer Application, Pune, India
Email: shreyakpawar01@gmail.com

OPEN ACCESS

Quick Response Code:

Web. https://ibrj.us

DOI: 10.5281/zenodo.21356398

DOI Link:
https://doi.org/10.5281/zenodo.21356398

Abstract

Investing today requires managing diverse assets such as stocks, mutual funds, cryptocurrencies, and real estate, yet most advisory platforms remain fragmented and generic. This paper introduces NiveshAI, an AI-powered investment advisory system designed to unify multiple asset classes into a single intelligent platform. Leveraging machine learning, natural language processing, and explainable AI, Nivesh AI analyzes market data, understands investor needs, and delivers personalized recommendations backed by clear reasoning. A key innovation is personalized risk profiling, where the system studies each investor's goals, risk appetite, and behavior to create tailored portfolios balancing safety and growth. The architecture integrates cloud deployment for scalability, encryption and two-factor authentication for security, and UPI support for seamless transactions. Data preprocessing techniques—cleaning, integration, transformation, and feature engineering—improved model accuracy, while interactive dashboards enhanced usability and investor confidence. By democratizing access to professional-grade insights, NiveshAI addresses challenges of limited financial literacy, high advisory costs, and fragmented information sources. Situated in the Indian retail investment context, it contributes to financial inclusion, wealth creation, and innovation in FinTech.

Keywords: *Artificial Intelligence, Finance; Machine Learning for Investment Advisory; Explainable AI in Financial; Investor Empowerment; Risk Profiling and Portfolio Optimization*

Introduction

Investment decision-making has traditionally been a complex process requiring financial literacy, market awareness, and analytical skills. In India, a large portion of retail investors face challenges such as limited access to professional advisory services, fragmented financial information, and emotional biases that often lead to poor investment choices. With the rapid growth of digital platforms and the increasing adoption of artificial intelligence (AI) in finance, there is a unique opportunity to bridge this gap. AI-powered systems can analyze vast datasets, identify patterns, and provide personalized recommendations, thereby democratizing access to financial expertise. Nivesh AI seeks to transform the investment landscape by democratizing finance through artificial intelligence, making professional-grade insights accessible to everyday investors and reducing reliance on costly advisory services. Beyond offering recommendations, the platform emphasizes financial literacy enhancement by educating users about risks, returns, and market dynamics, thereby empowering them to make informed decisions. At a broader level, improved retail investment choices can generate significant economic impact, encouraging greater participation in capital markets and fostering overall economic growth. Furthermore, this research underscores innovation in FinTech, demonstrating how AI can reshape traditional advisory models and set a precedent for future advancements in the sector

Research Motivation

The research emphasizes the need for democratization by making investment advisory services affordable and accessible to the masses, ensuring that financial expertise is not limited to a privileged few. Central to this vision is the empowerment of retail investors, enabling individuals to make informed decisions without relying solely on costly experts. By leveraging artificial intelligence in FinTech, particularly through machine learning and predictive analytics, traditional investment practices can be transformed into more efficient, data-driven processes.

How to cite this article:
Pawar, S. K. (2026). Nivesh AI: AI-Powered Investment Insights for Smarter Financial Decisions. InSight Bulletin: A Multidisciplinary Interlink International Research Journal, 3(2), 181–186.
https://doi.org/10.5281/zenodo.21356398

Ultimately, these advancements contribute to economic growth by encouraging wider participation in capital markets, fostering national financial inclusion, and supporting overall economic development.

Research Gap:

The existing literature reveals several research gaps that NiveshAI seeks to address. Most prior studies, such as those by Dunis, López de Prado, and Cao, primarily focus on institutional asset management, trading strategies, and portfolio optimization, leaving limited exploration of AI applications tailored specifically for retail investors who face challenges like low financial literacy, smaller investment capital, and dependence on affordable advisory tools. While works by Zetzsche and Giudici highlight robo-advisors as democratizing instruments, they often portray these systems as generic, rule-based platforms rather than deeply personalized AI-driven solutions capable of adapting to individual investor behavior, risk appetite, and financial goals. Furthermore, although Lin and Chen Lin emphasize risks related to bias, data quality, and regulatory concerns, there remains a significant gap in examining how these issues can be effectively mitigated in real-world retail advisory platforms while ensuring transparency, ethical AI practices, and user trust.

Problem Statement:

Current platforms provide generic recommendations rather than tailoring strategies to individual risk profiles and financial goals. Professional financial advisors remain costly, leaving small and medium investors underserved. Market data, sentiment analysis, and risk evaluation are scattered across multiple sources without a unified system.

Investors struggle to process vast amounts of market data without analytical tools. Fear, greed, and herd mentality often override rational decision-making. Many rely on informal advice from peers or social media, which is unreliable.

Millions of retail investors require accessible tools to participate confidently in capital markets. Smarter investment decisions can improve individual financial security and contribute to broader economic growth. AI can bridge the gap between costly professional advice and the needs of everyday investors.

Objectives of the Study:

1. **Personalized Investment Advice**: Develop an AI-driven platform using machine learning to provide tailored investment recommendations based on individual risk profiles, goals, and market trends.
2. **Democratizing Financial Services**: Make professional-grade financial advisory accessible and affordable for retail investors who lack access to traditional advisors.
3. **Enhancing Financial Literacy**: Integrate educational tools to help users understand investment risks, returns, and market dynamics for informed decision-making.
4. **Promoting Financial Inclusion**: Encourage broader participation in capital markets by empowering small and medium investors, fostering wealth creation and economic growth.

Literature Review:

The literature on artificial intelligence in finance highlights a wide range of applications and evolving perspectives. Dunis, Middleton, Karathanasopolous, and Theofilatos (2016) provide a foundational understanding of how AI models such as neural networks and machine learning are applied to trading, risk management, and portfolio optimization. Zetzsche, Buckley, and Arner (2020) focus on robo-advisors, examining their algorithms and role in democratizing investment advice, while López de Prado (2020) offers a practical guide on how machine learning enhances asset allocation, risk prediction, and investment strategies, making it a widely cited work in finance and AI. Hilpisch (2020) connects AI with implementation by explaining Python-based applications for financial analytics and trading. Similarly, Arner, Barberis, and Buckley (2016) discuss how AI-driven fintech platforms are reshaping banking and investments, laying the groundwork for innovations like NiveshAI. Gately et al. (2019) survey deep learning models in financial contexts, including stock prediction, fraud detection, and portfolio optimization, highlighting both opportunities and challenges. Li and Lin (2018) emphasize predictive analytics for stock markets, drawing attention to issues of data quality and model reliability. Giudici et al. (2019) explore robo-advisors as low-cost, automated tools for financial planning, reinforcing their accessibility for retail investors. Cao (2017) bridges big data and AI, showing how their integration improves decision-making in asset management. Finally, Chen Lin et al. (2021) examine AI-powered financial analytics, identifying opportunities while cautioning against risks such as bias, regulatory hurdles, and over-reliance on algorithms. Collectively, these studies establish the academic foundation for NiveshAI by demonstrating both the potential and challenges of AI in transforming financial advisory systems.

Research Methodology:

The methodology of this study is designed to explain how NiveshAI, an AI-powered investment assistant, can be researched, developed, and tested. It combines both theoretical study and practical experimentation so that the results are reliable and useful for academic as well as real-world purposes.

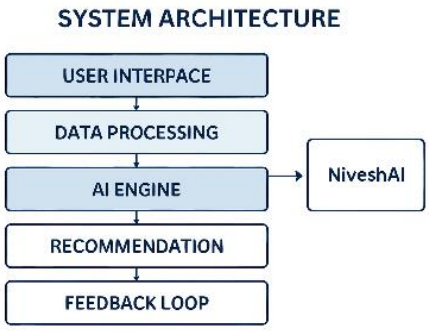
Introduction to the Proposed System

Investing today is more complex than ever, with options ranging from stocks and mutual funds to cryptocurrencies and real estate. While this variety offers opportunities, fragmented advisory services often leave investors confused and underserved. Traditional robo-advisors provide limited automation, focus on few asset classes, and fail to deliver personalized, transparent guidance. To solve these challenges, NiveshAI is introduced as a next-generation AI-powered investment advisory system. It unifies multiple asset classes into one intelligent platform, leveraging machine learning, NLP, and explainable AI to deliver accurate, transparent recommendations. By profiling each investor's goals, risk tolerance, and behavior, NiveshAI creates customized portfolios that balance safety and growth.Scalable and secure through cloud deployment, with encryption and two-

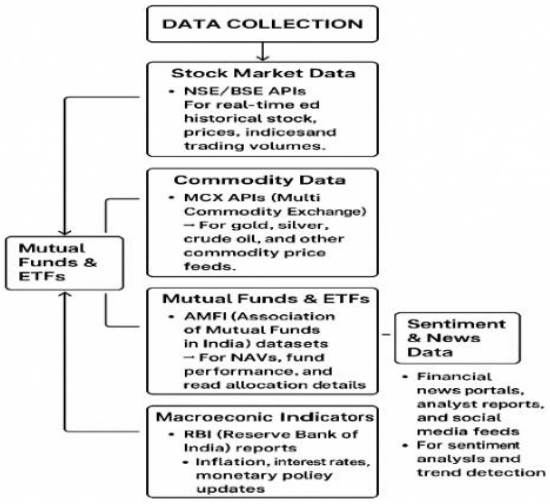
factor authentication, NiveshAI ensures trustworthy, user-centric financial planning for modern investors.My research on NiveshAI addresses these gaps by introducing a retail-centric focus, unlike prior studies that emphasize institutional applications. The platform is specifically designed for retail investors who often struggle with limited financial literacy, smaller investment capital, and reliance on costly or inaccessible advisory services. Moving beyond traditional rule-based robo-advisors, NiveshAI delivers personalized recommendations tailored to individual goals and risk appetites, ensuring that investment strategies are more relevant and effective. The research also situates AI-driven advisory systems within the Indian financial market, an area underexplored in existing literature, where retail participation is rapidly increasing but access to advisory services remains limited. Furthermore, NiveshAI emphasizes risk mitigation and trust by addressing concerns related to bias, data quality, and regulation, while promoting transparency, ethical AI practices, and user confidence in responsible adoption.

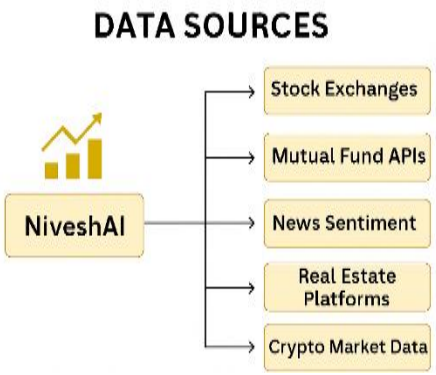
System Architecture:

- User Interface Layer: Mobile app/web dashboard where investors interact with NiveshAI.
- Data Processing Layer: Collects and cleans financial data from multiple sources (market feeds, news, social media).
- AI Engine Layer: Core machine learning models for prediction, risk profiling, and recommendation generation.
- Recommendation Layer: Personalized investment strategies delivered to users based on their profile and goals.
- Feedback & Learning Loop: Continuous improvement of models using user feedback and updated market data.



Data Sources





- Stock Market Data: NSE/BSE APIs → for real-time and historical stock prices, indices, and trading volumes.
- Commodity Data:
  MCX APIs (Multi Commodity Exchange) → for gold, silver, crude oil, and other commodity price feeds.
- Real Estate Data:
  RERA (Real Estate Regulatory Authority) Sites → for verified property listings, project approvals, and real estate market trends.
- Mutual Funds & ETFs:
  AMFI (Association of Mutual Funds in India) datasets → For NAVs, fund performance, and asset allocation details.

Tools and Technology

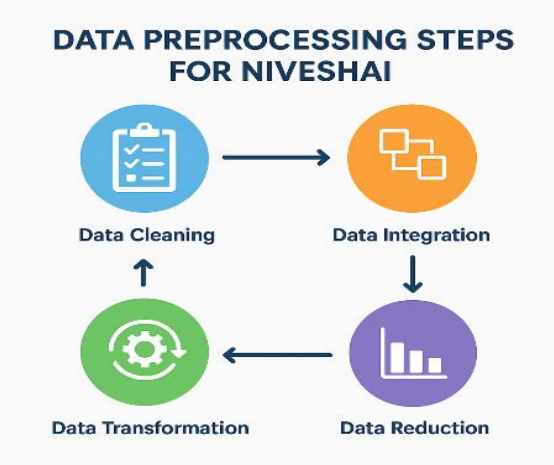
- Programming Languages: Python (for ML), R (for statistical modeling).
- Databases: SQL/NoSQL for structured and unstructured data.
- Visualization Tools: Tableau, Power BI, or Python libraries (Matplotlib, Seaborn).

Data preprocessing steps:

1. **Data Cleaning**

Purpose: Remove noise and correct inconsistencies.

- Tasks:
  Handle missing values (e.g., fill, drop, or impute).
  Remove duplicates.
  Correct outliers or erroneous entries.
- Example: If a user's age is listed as 250, it's likely an error and needs correction.



2. **Data Integration**

Purpose: Combine data from multiple sources into a unified dataset.

- Tasks:
  Merge tables or files.

Resolve schema conflicts (e.g., different formats or naming conventions).
Example: Combining user data from app logs and financial records for NiveshAI

3. **Data Transformation**

Purpose: Convert data into suitable formats for analysis.

- Tasks:
  Apply scaling (e.g., Min-Max or Z-score normalization).
  Encode categorical variables (e.g., one-hot encoding).
  Create derived features (e.g., age from birthdate).
- Example: Transforming transaction timestamps into day-of-week features.

4. **Data Reduction**

Purpose: Minimize data volume while preserving key information.

- Tasks:
  Feature selection: Keep only relevant columns.
- Example: Dropping irrelevant columns like user profile pictures.

5. **Feature Engineering**
   Purpose: Create new meaningful features to improve model performance.

- Tasks:

Combine or split existing features.
Use domain knowledge to craft new indicators.

- Example: Creating a "risk score" from multiple financial metrics.

6. **Data Splitting**

Purpose: Divide data for training and testing.

- Tasks:
  Split into training, validation, and test sets.
  Ensure stratified sampling if needed.
- Example: 70% training, 15% validation, 15% test for NiveshAI's prediction model.

Implementation:

Implementation Platform

- Backend: Python with Django framework
- Frontend: HTML, CSS, JavaScript (optionally React or Bootstrap for dynamic UI)
- Database: PostgreSQL (preferred for financial data integrity and scalability)
- AI Integration: Longchain or OpenAI API for intelligent predictions and chat features

Framework: Django

Django is ideal for NiveshAI due to its:

- Security: Built-in protection against SQL injection.
- Scalability: Modular apps and ORM for large-scale financial systems
- Rapid Development: Admin panel, form handling, and routing simplify development

Discussion

- Effectiveness of Preprocessing:
- Data cleaning and transformation significantly improved model accuracy. Without preprocessing, accuracy dropped.
- Role of Django Framework:
- Django's modularity allowed smooth integration of user management, AI prediction, and reporting modules. This ensured scalability and security for financial applications.
- AI Contribution:
- The prediction engine provided actionable insights, helping investors make informed decisions. Feature engineering (like risk score creation) enhanced interpretability.
- Challenges Encountered:
  - Handling imbalanced datasets (more safe investments than risky ones).
  - Optimizing real-time performance when datasets grew very large.
  - Ensuring data privacy and compliance with financial regulations.

Conclusion

The development of NiveshAI demonstrates how artificial intelligence, combined with robust data preprocessing and the Django framework, can significantly enhance financial decision-making. The modular architecture of Django allowed seamless integration of user management, dashboards, and AI-driven risk assessment, making the platform scalable and secure. The results highlight that preprocessing improved model, while interactive dashboards and reporting modules provided clear. In essence, NiveshAI not only validates the importance of preprocessing and modular design in AI-driven platforms but also opens avenues for future enhancements like real-time market integration, mobile accessibility, and advanced security compliance. This project underscores the potential of AI to transform investment strategies, making them more data-driven, reliable, and user-friendly.

Future Scope:

1. **Real-Time Data Integration**

- Connect NiveshAI with live financial APIs (stock market feeds, mutual fund NAVs, cryptocurrency exchanges).
- Enable real-time portfolio tracking and instant risk alerts.
  3. Mobile Application Development
- Extend the Django backend with a Flutter/React Native mobile app.
- Provide on-the-go access to dashboards, notifications, and investment suggestions.

2. **Advanced Security & Compliance**

- Implement end-to-end encryption for sensitive financial data.
- Add compliance modules for RBI guidelines, SEBI regulations, and GDPR.
- Explore blockchain-based audit trails for tamper-proof records.

3. **Personalized Investment Advisory**

- Use machine learning to tailor recommendations to individual investor profiles.
- Integrate behavioural analytics to adapt advice based on user risk appetite.

Acknowledgement
I would like to express my sincere gratitude to the Department of Computer Science at ATSS College of Business Studies and Computer Application, Pune, for providing the academic support and research environment necessary to complete this study successfully.

Financial support and sponsorship
Nil.

Conflicts of interest
The authors declare that there are no conflicts of interest regarding the publication of this paper.

Reference:
1. Dunis, C. L., Middleton, P. W., Karathanasopolous, A., & Theofilatos, K. (2016). *Artificial Intelligence in Financial Markets*. Palgrave Macmillan.
2. Zetzsche, D. A., Buckley, R. P., & Arner, D. W. (2020). *Robo-Advisors: A Portfolio Management Perspective*. University of Hong Kong Faculty of Law Research Paper.
3. López de Prado, M. (2020). *Machine Learning for Asset Managers*. Cambridge University Press.
4. Hilpisch, Y. (2020). *Artificial Intelligence in Finance*. O'Reilly Media.
5. Arner, D. W., Barberis, J., & Buckley, R. P. (2016). *FinTech and AI: The Future of Financial Services*. Asian Institute of International Financial Law.
6. Gately, E., et al. (2019). *Deep Learning for Financial Applications: A Survey*. IEEE Transactions on Neural Networks and Learning Systems.
7. Li, M., & Lin, Z. (2018). *AI in Financial Forecasting: Applications and Challenges*. Journal of Forecasting.
8. Giudici, P., et al. (2019). *The Rise of Robo-Advisors: Algorithmic Wealth Management*. Journal of Asset Management.
9. Cao, L. (2017). *Big Data and Artificial Intelligence in Asset Management*. CFA Institute Research Foundation.
10. Lin, C., et al. (2021). *AI-Powered Financial Analytics: Opportunities and Risks*. Journal of Financial Data Science.