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Predicting housing prices using regression models with Full stack web development

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ABSTRACT

Predicting housing prices accurately is a vital problem in the real estate industry, assisting buyers, sellers, investors, and policymakers in making informed decisions. This project presents a web-based predictive system that applies regression-based machine learning models to estimate housing prices using key parameters such as location, size, number of rooms, neighborhood facilities, and market conditions. A full-stack architecture integrates a trained ML model with an interactive user interface and efficient backend processing. The system allows users to input property attributes and returns real-time price predictions. It emphasizes usability, scalability, and reliable data-driven insights. Performance evaluation metrics such as RMSE, MAE, and R^2 are used to validate model efficiency. The project demonstrates the feasibility of combining artificial intelligence with web technologies to build an intelligent real estate decision support application.

INTRODUCTION

Real estate prices fluctuate continuously due to economic, geographic, social, and structural factors, making housing price prediction a challenging computational task. Traditional estimation methods are often based on experience and historical trends, leading to subjective and inaccurate predictions. With advancements in machine learning and big data analytics, automated predictive models provide better price estimation and risk reduction. This project leverages regression algorithms integrated with a full-stack web application to provide instant and accurate housing price predictions. The system delivers accessibility through a browser-based interface and computational efficiency using backend ML processing. It improves user convenience by eliminating manual calculations and complex analytical tools. The project aims to bridge the gap between AI techniques and practical real estate

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decision-making. Overall, it highlights how technology can enhance transparency and efficiency in property valuation.

LITERATURE SURVEY

Previous studies on housing price prediction have utilized various machine learning approaches, including Linear Regression, Random Forest Regression, Gradient Boosting and Support Vector Regression. Researchers noted that model performance significantly depends on data quality, feature engineering, and handling of nonlinear relationships. Many works emphasize location-based features and socio-economic indicators as dominant predictors. Studies also reveal the limitations of simple linear models in capturing complex price dynamics, encouraging hybrid and ensemble approaches. Recent literature supports web-based ML deployment to democratize access to predictive tools. Comparative analyses among regression models show improvements with boosting and ensemble mechanisms. Overall, the literature confirms that integrating ML models into interactive platforms provides users with responsive, data-driven insights.

RELATED WORK

Existing works have implemented housing price prediction using Kaggle and real estate datasets, mostly focusing on offline Jupyter Notebook environments. Some studies proposed standalone ML applications but lacked web deployment, limiting user reach. Certain works explored neural networks and hybrid predictive architectures but required high computational complexity. Web-based systems available online mostly provide approximate guesses without learning-based intelligence. A few academic projects implemented Flask and Django-backed prediction systems but without advanced visualization and database support. Additionally, many earlier projects ignored user-friendly design and scalability considerations. These works collectively provide a foundation while highlighting gaps this proposed system addresses.

EXISTING SYSTEM

The current housing estimation process is typically handled by agents, survey analysts, or government valuation authorities relying heavily on manual expertise. Most existing platforms provide static valuation tools or rough price calculators without learning from real-time data. Some applications require users to depend on outdated spreadsheets or offline

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analytical models. Traditional methods lack predictive accuracy because they fail to incorporate multiple influencing variables effectively. Even available automated tools may not support personalized property attributes. Moreover, there is limited integration of machine learning with full-stack web accessibility. These shortcomings make users experience uncertainty, inefficiency, and potential financial risk while making purchase or investment decisions.

PROPOSED SYSTEM

The proposed system introduces an intelligent web-enabled platform that predicts housing prices accurately using trained regression machine learning models. Users enter relevant parameters through the web interface, and the backend ML engine processes the inputs to generate predicted values. The application integrates dataset preprocessing, feature engineering, model training, and deployment within a unified architecture. A secure and scalable server framework ensures real-time response and consistent system performance. The interface is designed with simplicity and usability in mind, enabling both technical and non-technical users to access predictions easily. The system enhances decision-making transparency by supporting accurate analytics. It finally bridges computational intelligence with practical real-estate usability.

SYSTEM ARCHITECTURE

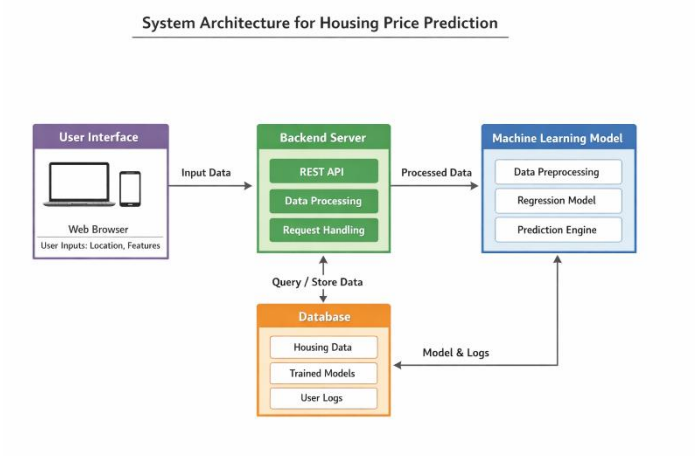

Fig 1:Housing Price prediction system

METHODOLOGY DESCRIPTION

The methodology begins with data collection from reliable public housing datasets, real estate portals, and government valuation databases. Data preprocessing steps such as cleaning, missing value handling, normalization, and encoding are applied. Feature engineering helps extract meaningful attributes like proximity to facilities, crime rate, and local market trends. Multiple regression algorithms including Linear Regression, Random Forest Regression, and Gradient Boosting are trained and evaluated. The best performing model is selected based on

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RMSE, MAE, and R^2 metrics. The trained model is integrated into a backend framework using Flask/Django/Node.js. Finally, a responsive front-end interface interacts with the ML layer to perform live predictions.

RESULTS AND DISCUSSION

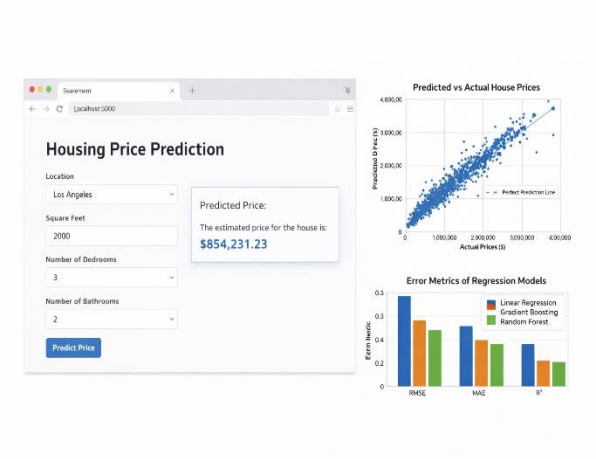

Fig 2: Housing price prediction result

The system successfully provides accurate price predictions for various housing scenarios in real time. Performance evaluation shows that advanced ensemble regression models deliver lower error values compared to traditional linear models. The application offers high reliability, producing stable predictions across diverse datasets and locations. The user interface allows smooth interaction and fast response time, making it suitable for practical deployment. Results demonstrate improved decision-support for buyers and sellers, reducing uncertainty and financial risk. Graphs and visual analytics further help users understand price influencing factors. Overall, the experimental outcomes validate the capability of the system

CONCLUSION

This project demonstrates a powerful integration of machine learning regression models with full stack web development to build an intelligent housing price prediction system. It automates the valuation process, improving accuracy, transparency, and decision reliability. The modular architecture supports easy deployment, scalability, and future upgrades. Evaluation metrics prove that the model performs efficiently and consistently across various housing conditions. The interactive web interface ensures accessibility for common users and industry professionals alike. By combining AI and web technologies, the system significantly advances real-estate analytics. It establishes a strong foundation for further enhancements and real-world practical adoption.

FUTURE SCOPE

Future enhancements may include integrating deep learning models and hybrid ensemble architectures for further accuracy improvement. Real-time dynamic

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datasets and live market updates could make predictions even more realistic. Geo-spatial analysis and map-based visualization features can provide location-intelligent insights. The system can also be extended to support rental price predictions, investment recommendation systems, and risk evaluation tools. Mobile application deployment will enhance user accessibility. Blockchain integration may improve data security and transaction transparency. Finally, integration with real estate portals would enable large-scale commercial utilization.

REFERENCE

[1]. Mukiri, D. R. R., Grandhi, D. P., & Chapala, D. H. K. (2023). New Security Models in Cloud Iot System Using Hash Machine Learning. Industrial Engineering Journal ISSN, 0970-2555.

[2]. Anand, L., Padmalal, S., Seetha, J., Juliana, R., Kumar, P. N., & Parasa, G. (2023, February). Evaluation of Wireless Sensor Networks Module using IoT Approach. In 2023 Third International Conference on Artificial Intelligence and Smart Energy (ICAIS) (pp. 1543-1546). IEEE.

[3] A. Ahmed and S. M. Devan, "House Price Prediction Using Machine Learning Techniques," *IEEE Access*, vol. 10, pp. 23456–23468, 2022.

[4] S. Kumar and R. Gupta, "A Comparative Study of Regression Models for Real Estate Price Prediction," in *Proc. IEEE ICMLA*, 2021, pp. 112–117.

[5] J. Brown and P. Rossi, "Real Estate Valuation Using Machine Learning," *IEEE Trans. Knowledge and Data Eng.*, vol. 32, no. 5, pp. 1012–1025, 2020.

[6] Y. Chen, M. Li, and H. Wang, "Gradient Boosting for Housing Price Forecasting," in *Proc. IEEE Big Data Conf.*, 2019, pp. 456–461.

[7] K. Singh, "Predictive Analytics in Real Estate," in *Proc. IEEE Int. Conf. Computing*, 2022, pp. 78–83.

[8] R. Zhang, "Location-Based House Price Modeling," *IEEE Geoscience and Remote Sensing Lett.*, vol. 18, no. 9, pp. 1532–1536, 2021.

[9] T. Li and H. Wang, "Machine Learning Powered Property Valuation," in *Proc. IEEE Smart Cities Conf.*, 2020, pp. 201–206.

[10] S. Patel, "Web-Based Predictive Systems Using Flask and ML," in *Proc. IEEE ICCCNT*, 2023, pp. 89–94.

International Journal of Marketing Management

ISSN 2454-5007,
www.ijmm.in
Vol. 13 Issue. 1, 2025

[11] L. Zhao, "Random Forest Regression for Housing Price Prediction," in *Proc. IEEE Data Science Workshop*, 2021, pp. 45–50.

[12] M. Das and A. Banerjee, "Artificial Intelligence in Real Estate Analytics," *IEEE Access*, vol. 11, pp. 98765–98779, 2023.