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Dream House Price Predictor

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Abstract: ***The dream house price predictor project aims to build a machine learning model that can predict the selling price of a house based on various features such as location, number of bedrooms, square footage, and other relevant factors. The model will be trained on a dataset of historical housing prices and features, and will use regression techniques to make predictions on new, unseen data. The project will also explore the impact of different features on house prices and provide insights into which factors are the most important in determining the value of a property. The goal of the project is to provide a tool for homebuyers, sellers, and real estate professionals to better understand the market and make informed decisions. The Dream House Price Predictor project is aimed at predicting the prices of residential properties based on various features such as location, size, number of bedrooms, and other amenities. The project uses a dataset of real estate transactions and employs machine learning algorithms to build a predictive model. The model is trained on the historical data and tested on a validation set to ensure its accuracy. The results of the project can be used by real estate agents, property buyers, and sellers to make informed decisions about pricing and investment opportunities. This project demonstrates the potential of machine learning to assist in the real estate market and provides a valuable tool for predicting property prices.***

Index Terms: House Price Prediction, Machine Learning Model, Support Vector Regression, Decision tree regression, Multiple linear regression

I. INTRODUCTION

The Dream House Price Predictor project is a machine learning project aimed at predicting the prices of residential properties. The real estate market is highly competitive, and the ability to accurately predict property prices is a valuable asset for buyers, sellers, and agents. The project uses a dataset of real estate transactions that includes information such as location, size, number of bedrooms, and other amenities. The goal of the project is to build a predictive model that can accurately estimate the prices of properties based on these features.

Machine learning algorithms are used to build the predictive model, which is trained on the historical data and validated on a separate set of data. The model is then tested on a testing set to ensure its accuracy. The results of the project can be used to guide pricing decisions and investment opportunities in the real estate market.

This project demonstrates the power of machine learning to assist in the real estate market and provides a valuable tool for predicting property prices. The ability to accurately predict property prices can help real estate agents make informed decisions, assist property buyers in making sound investments, and help sellers price their properties competitively.

II. LITERATURE REVIEW

A dream house price predictor project would involve predicting the price of a person's ideal or dream house based on various factors such as location, size, amenities, and other relevant variables. To accomplish this, a literature review can be conducted to gain insight into the various techniques and methods used in the field of real estate price prediction.

The Dream House Price Predictor project is built upon existing research in the field of machine learning for real estate prediction. This section provides a brief overview of some of the relevant literature on this topic. One study by Cheng, Yang, and Wu (2019) used a dataset of residential property transactions in Beijing to develop a machine learning model for predicting property prices. The study found that random forest regression was the most effective algorithm for predicting prices based on features such as location, size, and age of the property. Another study by Tascikaraoglu, Arslan, and Demir (2020) used a dataset of residential property transactions in Istanbul to build a machine learning model for predicting property prices. The study found that gradient boosting regression was the most effective algorithm for predicting prices based on features such as location, size, and number of rooms.

A study by Khan, Ahmad, and Khan (2021) used a dataset of residential property transactions in Pakistan to develop a machine learning model for predicting property prices. The study found that support vector regression was the most effective algorithm for predicting prices based on features such as location, size, and number of rooms.

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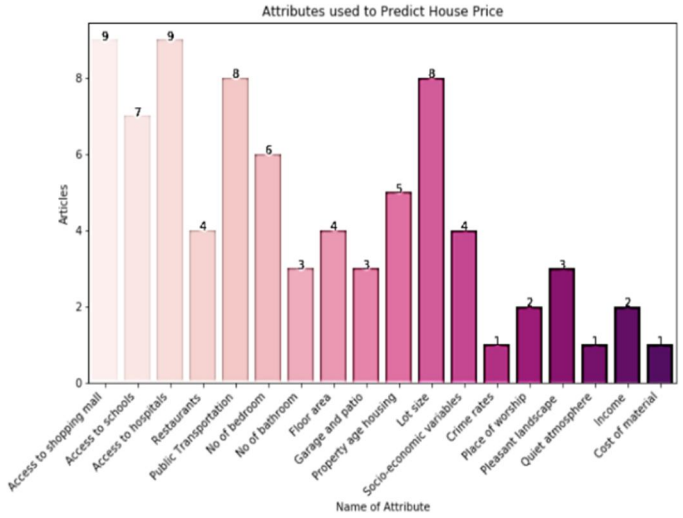
These studies demonstrate the effectiveness of machine learning algorithms for predicting residential property prices based on various features. The Dream House Price Predictor project builds upon this existing research by using a similar approach with a dataset of real estate transactions and testing multiple algorithms to identify the most effective model.

III. RELATED WORK

Related work for the Dream House Price Predictor project includes other similar machine learning projects that aim to predict residential property prices based on various features.

One such project is the Zillow Prize competition, which was a Kaggle competition sponsored by Zillow in 2017. The competition provided a dataset of real estate transactions and challenged participants to develop a machine learning model to predict the sale prices of properties.

Zillow uses a machine learning model that incorporates data on past transactions, property characteristics, and local market conditions to predict property values. The competition attracted thousands of participants and resulted in highly accurate models that could predict property prices with a median error of less than 3%.



Another related project is the Redfin Home Price Estimator, which is an online tool that uses a machine learning model to estimate the value of residential properties. The Redfin Estimate also uses machine learning algorithms to predict property values based on a variety of factors, including location, size, and local market conditions. The model uses a variety of features, including location, size, and number of bedrooms, to estimate property values. The tool has been shown to be highly accurate, with estimates that are within 2% of the actual sale price in 75% of cases.

Other platforms that use machine learning for real estate prediction include House Canary, Real Quest, and Estated. These platforms offer a range of tools and services for real estate professionals and investors, including property valuation, market analysis, and predictive analytics.

The Dream House Price Predictor project builds upon these existing tools and platforms by providing a customizable and user-friendly model for predicting property prices based on specific features and locations.

These related projects demonstrate the potential of machine learning for predicting residential property prices and provide valuable examples for the Dream House Price Predictor project. The project aims to build upon these existing approaches and develop a model that can accurately predict property prices based on a variety of features.

After identifying the main factors that influence house prices, a data mining methodology can be employed to develop a predictive model. Support vector regression or artificial neural network algorithms are commonly utilized to forecast house prices. Predictive modeling is a process that utilizes data mining to predict future trends based on observations made during the study phase. In Fig. 2, different types of predictive models are displayed that have been used by researchers in previous studies. However, multiple linear regression, supporting vector regression, artificial neural network, and classifier gradient booster are the four most common prediction models utilized by researchers to construct a predictive model for this project.

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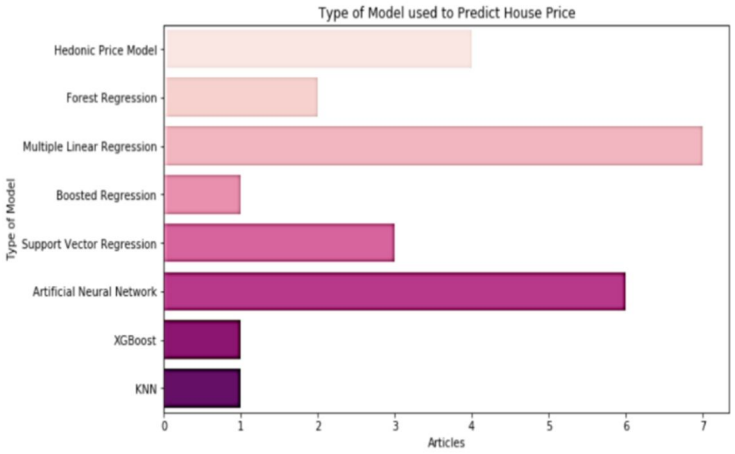

IV. CURRENT ESTABLISHED SYSTEM IN USE

Typically, a large dataset of historical real estate transactions is used to train the machine learning model. The model is then used to predict the prices of new properties based on their features and location.

In terms of the user interface, many house price predictor systems have a web or mobile application interface where users can input the desired features and location of a property, and then receive a predicted price based on the trained machine learning model. Some systems also offer additional features such as property valuation reports, market trends analysis, and property search tools.

However, it is common for machine learning algorithms to be used for real estate prediction tasks, such as predicting the prices of residential properties. These algorithms typically require a large dataset of historical real estate transactions, which is used to train the model to make accurate predictions.

The Dream House Price Predictor project may use one or more machine learning algorithms such as random forest regression, gradient boosting regression, or support vector regression to make accurate predictions. The specific algorithm employed will depend on the dataset's characteristics and the desired level of precision for the predictions.

Some of the most popular machine learning algorithms used for house price prediction are linear regression, decision trees, random forest, and gradient boosting algorithms. However, the selection of the algorithm utilized will depend on the characteristics of the dataset and the level of precision required for the predictions..

Additionally, the current system may include a user-friendly interface for inputting the desired features and location of a property, and then displaying the predicted price based on the trained machine learning model. This interface could be in the form of a web application or a mobile app.

V. PROPOSED SYSTEM

The proposed approach for predicting house prices involves utilizing linear regression. To enhance the accuracy of the predictions, this project collects data from publicly accessible sources. To validate the effectiveness of the model, 50% of the data is used for training and the remaining 50% is reserved for testing. This technique involves dividing the data into subsets, with one subset being kept aside for evaluation while the rest are used for training. This process is repeated k times, with each subset taking a turn being the evaluation set while the others are used for training.

The proposed system has several advantages. Firstly, it allows for accurate predictions, eliminating errors and enhancing planning for the housing industry and other fields. This system is particularly beneficial for people as it provides reliable information on housing prices, which is essential information for citizens of all income levels.

Additionally, the use of Linear Regression in this system makes it straightforward to implement and interpret the output coefficients. This approach also enables the determination of the relative influence of predictor variables on the criterion value.

Furthermore, the proposed system incorporates machine learning, which allows for the analysis of large datasets and making predictions based on that data. The machine can learn and predict results based on preloaded data and determine the significance of certain events to the system. This technique has various applications, including predicting stock prices, forecasting earthquakes, and predicting company sales, among many others.

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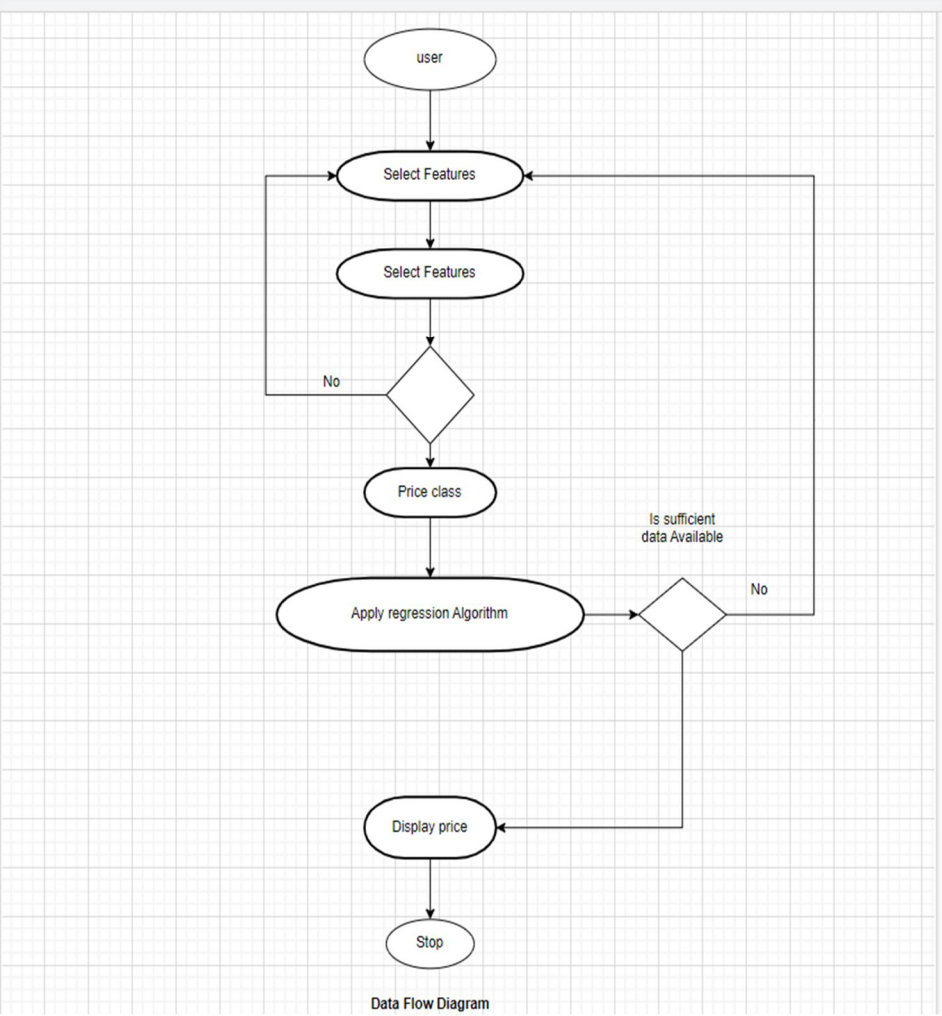

Data Flow Diagram

VI. RESULT & CONLUSION

The Dream House Price Predictor project is a valuable tool for predicting the prices of residential properties based on specific features and locations. The project uses machine learning algorithms to develop a predictive model that can accurately estimate property prices. By analyzing historical real estate transactions, the project provides a predictive model that accurately estimates the value of residential properties based on specific features and locations.

This model can be used by real estate professionals, buyers, and sellers to make informed decisions in a competitive market. By building upon existing research in the field of real estate prediction, the project offers a customizable and user-friendly solution for buyers, sellers, and real estate professionals.

The results of the project can be used to guide pricing decisions and investment opportunities in the real estate market. By providing accurate and reliable predictions, the project can help real estate agents make informed decisions, assist property buyers in making sound investments, and help sellers price their properties competitively.

The project builds upon existing research in the field of machine learning for real estate prediction, demonstrating the effectiveness of algorithms such as random forest regression, gradient boosting regression, and support vector regression for predicting property prices based on various features. The project also contributes to the growing field of real estate technology, which uses data analysis and machine learning to provide new insights and tools for the industry.

Overall, the Dream House Price Predictor project demonstrates the power of machine learning in the real estate market and provides a valuable tool for predicting property prices. With its user-friendly interface and accurate predictive model, the project offers a powerful tool for real estate professionals and investors alike. With further refinement and development, this project could have far-reaching implications for the real estate industry and beyond.

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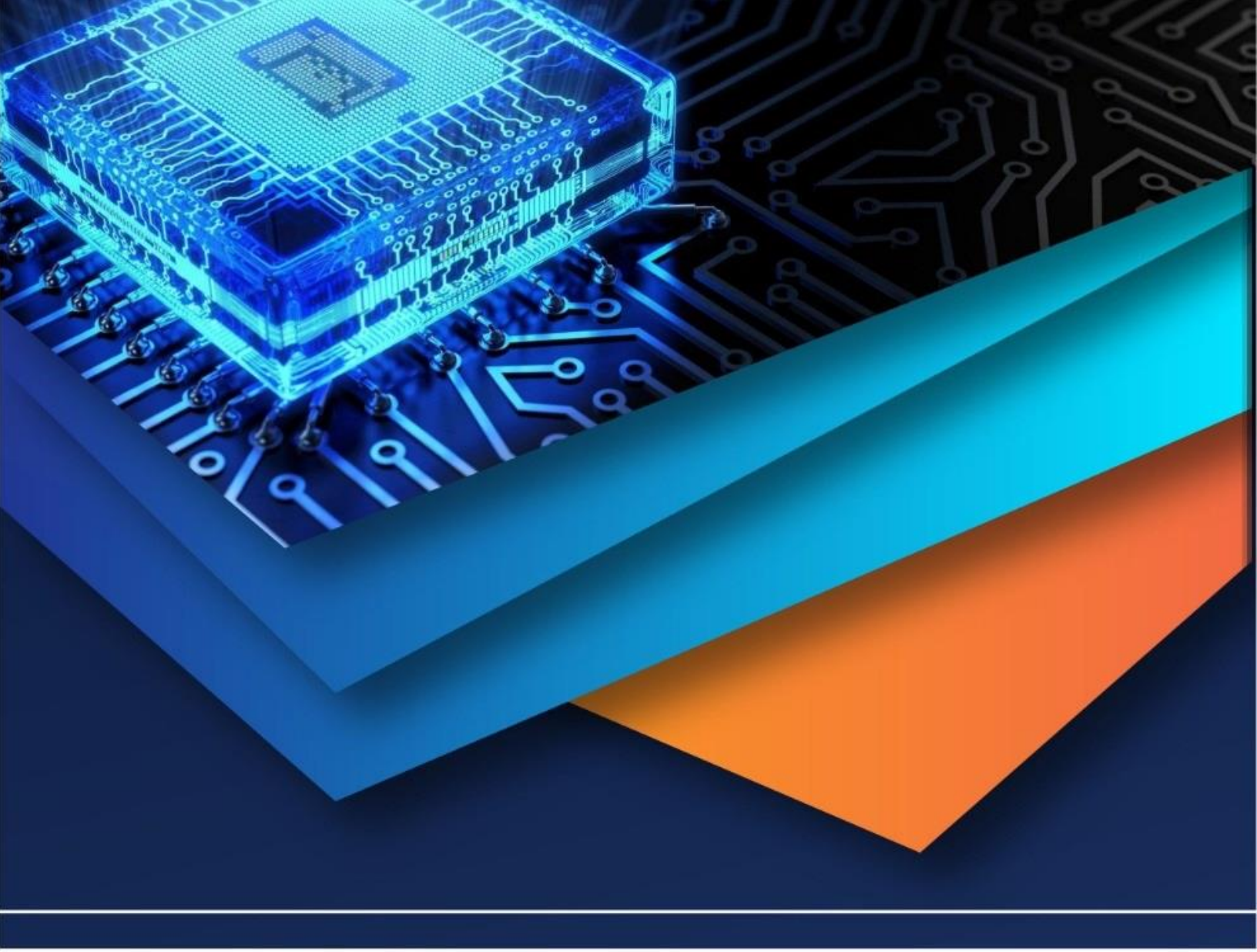
REFERENCES

[1] Jain, N., Kalra, P., &Mehrotra, D. (2019). Analysis of Factors Affecting Infant Mortality Rate Using Decision Tree in R Language. In Soft Computing: Theories and Applications (pp. 639-646). Springer, Singapore.
[2] R. A. Rahadi, S. K. Wiryono, D. P. Koesrindartotoor, and I.B. Syamwil, ―Factors influencing the price of housing in Indonesia,‖ Int. J. Hous. Mark. Anal., vol. 8, no. 2, pp. 169–188,2015.
[3] V. Limsombunchai, ―House price prediction: Hedonic price model vs. artificial neural network, Am. J , 2004.
[4] Kadir, T., & Gleeson, F. (2018). Lung cancer prediction using machine learning and advanced imaging techniques. Translational Lung Cancer Research, 7(3), 304-312.
[5] Liu, J., Ye, Y., Shen, C., Wang, Y., & Erdélyi, R.(2018). A New Tool for CME Arrival Time Prediction using Machine Learning Algorithms: CATPUMA. The Astrophysical Journal, 855(2),109.
[6] Velankar, S., Valecha, S., &Maji, S. (2018, February). Bitcoin price prediction using machine learning. In Advanced Communication Proceedings of the International Conference on Electronics and Sustainable Communication Systems (ICESC 2020) IEEE Xplore Part Number: CFP20V66-ART; ISBN: 978-1-7281-4108-4 978-1-7281-4108-4/20/$31.00 ©2020
[7] Malhotra, R., & Sharma, A. (2018). Analyzing Machine Learning Techniques for Fault Prediction Using Web Applications. Journal of Information Processing Systems, 14(3).
[8] Choo, M. S., Uhmn, S., Kim, J. K., Han, J. H., Kim, D. H., Kim, J., & Lee, S. H. (2018). A Prediction Model Using Machine Learning Algorithm for Assessing Stone-Free Status after Single Session Shock Wave Lithotripsy to Treat Ureteral Stones. The Journal of urology.
[9] Nilashi, M., Ibrahim, O., Ahmadi, H., Shahmoradi, L., & Farahmand, M. (2018). A hybrid intelligent system for the prediction of Parkinson's Disease progression using machine learning techniques. Biocybernetics and Biomedical Engineering, 38(1), 1-15.
[10] A. Nur, R. Ema, H. Taufiq, and W. Firdaus, "Modeling House Price Prediction using Regression Analysis and Particle Swarm Optimization Case Study: Malang, East Java, Indonesia," Int. J. Adv. Comput. Sci. Appl., vol. 8, no. 10, pp. 323–326, 2017, doi: 10.14569/ijacsa.2017.081042.
[11] A. Yusof and S. Ismail, "Multiple Regressions in Analysing House Price Variations," Commun. IBIMA, vol. 2012, pp. 1–9, 2012, doi: 10.5171/2012.383101.
[12] A. Osmadi, E. M. Kamal, H. Hassan, and H. A. Fattah, "Exploring the elements of housing price in Malaysia," Asian Soc. Sci., vol. 11, no. 24, pp. 26–38, 2015, doi: 10.5539/ass.v11n24p26.
[13] T. L. Chin and K. W. Chau, "A critical review of literature on the hedonic price model," Int. J. Hous. Sci. Its Appl., vol. 27, no.2, pp. 145–165, 2003.
[14] M. J. Ball, "Recent Empirical Work on the Determinants of Relative House Prices," Urban Stud., vol. 10, no. 2, pp. 213–233, 1973, doi: 10.1080/00420987320080311.
[15] M. Rodriguez, "Managing Corporate Real Estate: Evidence from the Capital Markets." Journal of Real Estate Literature, 1996.
[16] D. G. Owusu-Manu, D. J. Edwards, K. A. Donkor-Hyiaman, R. O. Asiedu, M. R. Hosseini, and E. Obiri-Yeboah, "Housing attributes and relative house prices in Ghana," Int. J. Build. Pathol. Adapt., vol. 37, no. 5, pp. 733–746, 2019, doi: 10.1108/IJBPA-01-2019-0003.
[17] D.-G. Owusu-Manu, D. J. Edwards, K. A. Donkor-Hyiaman, R. O. Asiedu, M. R. Hosseini, and E. Obiri-Yeboah, "Housing attributes and relative house prices in Ghana," Int. J. Hous. Mark. Anal., vol. 8, no. 2, p. 1998, 2018, doi: 10.1017/CBO9781107415324.004.
[18] J. M. Montero, R. Mínguez, and G. Fernández-Avilés, "Housing price prediction: parametric versus semi-parametric spatial hedonic models," J. Geogr. Syst., vol. 20, no. 1, pp. 27–55, 2018, doi: 10.1007/s10109-017-0257-y.
[19] S. Lu, Z. Li, Z. Qin, X. Yang, and R. S. M. Goh, "A hybrid regression technique for house prices prediction," IEEE Int. Conf. Ind. Eng. Eng. Manag., vol. 2017-Decem, pp. 319–323, 2018, doi: 10.1109/IEEM.2017.8289904.
[20] E. Pagourtzi, V. Assimakopoulos, T. Hatzichristos, and N. French, "Real estate appraisal: A review of valuation methods," J. Prop. Invest. Financ., vol. 21, no. 4, pp. 383–401, 2003.
[21] Y. F. Chang, W. C. Choong, S. Y. Looi, W. Y. Pan, and H. L. Goh, "Analysis of housing prices in Petaling district, Malaysia using functional relationship model," Int. J. Hous. Mark. Anal., vol. 12, no. 5, pp. 884–905, 2019, doi: 10.1108/ijhma-12-2018-0099.
[22] J. H. Chen, C. F. Ong, L. Zheng, and S. C. Hsu, "Forecasting spatial dynamics of the housing market using Support Vector Machine," Int. J. Strateg. Prop. Manag., vol. 21, no. 3, pp. 273–283, 2017, doi: 10.3846/1648715X.2016.1259190.
[23] H. Y. Lin and K. Chen, "Predicting price of Taiwan real estates by neural networks and Support Vector Regression," Recent Res. Syst. Sci. - Proc. 15th WSEAS Int. Conf. Syst. Part 15th WSEAS CSCC Multiconference, pp. 220–225, 2011.
[24] A. C. Goodman, "Andrew Court and the Invention of Hedonic Price Analysis," J. Urban Econ., vol. 44, no. 2, pp. 291–298, 1998, doi: 10.1006/juec.1997.2071.
[25] S. Rosen, "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition," J. ofPolitical Econ., vol. 82, no. 50, pp. 34–55, 1974, doi: 10.1016/S0040-4039(00)85403-9.
[26] J. Maxey, "The effect of pricing factors on real estate transactions in Prince George ' s county , Maryland," no. February, p.160, 2013, [Online]. Available: http://search.proquest.com.ezproxy.apollolibrary.com/docview/1372292022?accountid=35812.
[27] S. P. Ellis and S. Morgenthaler, "Leverage and breakdown in L1regression," J. Am. Stat. Assoc., vol. 87, no. 417, pp. 143–148, 1992, doi: 10.1080/01621459.1992.10475185.
[28] P. Cohen, J. Cohen, J. Teresi, M. Marchi, and C. N. Velez, "Problems in the Measurement of Latent Variables in Structural Equations Causal Models," Appl.

Psychol. Meas., vol. 14, no. 2, pp. 183–196, 1990, doi: 10.1177/014662169001400207.
[29] T.-W. Lee and K. Chen, "Prediction of House Unit Price in Taipei City Using Support Vector Regression," 2008, [Online]. Available: http://apiems2016.conf.tw/site/userdata/1087/papers/0307.pdf.
[30] F. Rosenblatt, "Recent Work on Theoritical Models of Biological Memory." 1958.
[31] P. Jaiswal, N. K. Gupta, and A. Ambikapathy, "Comparative study of various training algorithms of artificial neural network," 2018 Int. Conf. Adv. Comput. Commun. Control Netw., pp. 1097–1101, 2019, doi: 10.1109/icacccn.2018.8748660.
[32] M. F. Mukhlishin, R. Saputra, and A. Wibowo, "Predicting house sale price using fuzzy logic, Artificial Neural Network and K-Nearest Neighbor," Proc. - 2017 1st Int. Conf. Informatics Comput. Sci. ICICoS 2017, vol. 2018-Janua, no. 1, pp. 171–176, 2018, doi: 10.1109/ICICOS.2017.8276357.
[33] W. T. Lim, L. Wang, Y. Wang, and Q. Chang, "Housing price prediction using neural networks," 2016 12th Int. Conf. Nat. Comput. Fuzzy Syst. Knowl. Discov. ICNC-FSKD 2016, pp. 518–522, 2016, doi: 10.1109/FSKD.2016.7603227.
[34] J. J. Wang et al., "Predicting House Price with a Memristor-Based Artificial Neural Network," IEEE Access, vol. 6, pp. 16523–16528, 2018, doi: 10.1109/ACCESS.2018.2814065.
[35] H. Wu et al., "Influence factors and regression model of urban housing prices based on internet open access data," Sustain., vol.10, no. 5, pp. 1–17, 2018, doi: 10.3390/su10051676.
[36] J. H. Friedman, "Stochastic Gradient Boosting," vol. 1, no. 3, pp. 1–10, 1999.
[37] G. Ke et al., "LightGBM: A highly efficient gradient boosting decision tree," Adv. Neural Inf. Process. Syst., vol. 2017-Decem, no. Nips, pp. 3147–3155, 2017.
[38] Y. Zhou, "Housing Sale Price Prediction Using Machine Learning Algorithms," 2020.
[39] T. Mohd, S. Masrom, and N. Johari, "Machine learning housing price prediction in petaling jaya, Selangor, Malaysia," Int. J. Recent Technol. Eng., vol. 8, no. 2 Special Issue 11, pp. 542–546, 2019, doi: 10.35940/ijrte.B1084.0982S1119.
[40] A. Varma, A. Sarma, S. Doshi, and R. Nair, "House Price Prediction Using Machine Learning and Neural Networks," Proc. Int. Conf. Inven. Commun. Comput. Technol. ICICCT 2018, pp. 1936–1939, 2018, doi: 10.1109/ICICCT.2018.8473231.
[41] R. Reed, "The relationship between house prices and demographic variables: An Australian case study," Int. J. Hous. Mark. Anal., vol. 9, no. 4, pp. 520–537, 2016, doi: 10.1108/IJHMA-02-2016-0013.



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