

PRICE PREDICTION FOR REAL ESTATE USING MACHINE LEARNING ALGORITHM

MR.T.B.PRASAD REDDY Associate Professor, Department of CSE, NRI INSTITUTE OF TECHNOLOGY, Vijayawada, A.P., India.

S. ANURADHA², K. DIVYA³, SK. RAZIA⁴, P. SRI HARSHA⁵ Student, Department of CSE, NRI INSTITUTE OF TECHNOLOGY, Vijayawada, A.P., India.

ABSTRACT

The main aim of our project is to estimate the price of houses. Price prediction is to believe that house prices are dependent on the generic factors like area, location and square feet area of house. The data set proves that many other factors influence the final price of homes. This data set contains various explanatory variables to describe almost every aspect of the house. Generally house buyers neglect this information. As an outcome their price estimation is very different from the actual prices. We build a model to predict the price of residential homes using regression technique. This will provide buyers a rough estimate of what the houses are actually worth. This helps the ordinary people and real estate people to predict the prices.

INTRODUCTION

House is one of human life's most essential needs, along with other fundamental needs such as food, water, and much more. Demand for houses grew rapidly over the years as people's living standards improved. While there are people who make their house as an investment and property, yet most people around the world are buying a house as their shelter or as their livelihood. An increase in house demand occurs each year, indirectly causing house price increases every year. The problem arises when there are numerous variables such as location and property

demand that may influence the house price, thus most stakeholders including buyers and developers, house builders and the real estate industry would like to know the exact attributes or the accurate factors influencing the house price to help investors make decisions and help house builders set the house price. Real estate price prediction is commonly used to estimate the changes in housing price. Since the housing price is strongly correlated to other factors such as location, area, population.

There has been a considerably large number of papers adopting traditional machine learning approaches to predict house prices. But In our project we decided to use Regression technique. Linear regression is a supervised learning technique and performs regression task. It is mostly used to find relationship between independent and independent variables. We make use of a website to make user friendly, so that the users can enter the sqft, bedrooms, area and can view the estimated price on the website.

EXISTING SYSTEM

There is a vast amount of work that is focused on training models to detect patterns in datasets to predict what the future output could be. However, there are researches where the authors use different machine learning algorithms with a combination of pre-processing data methods.

The existing system involves calculation of

house prices without the necessary prediction about future market trends and price increase. A study was accomplished in 2017 by Suna Akkol, Ash Akilli, Ibrahim Cemal , where they did a comparison of Artificial neural network and multiple linear regression for prediction. In their study, the impact of different morphological measures on live weight has been modelled by artificial neural networks and multiple linear regression analyses. They used three different back-propagation techniques for ANN, namely Levenberg-Marquardt, Bayesian regularisation, and Scaled conjugate. They showed that ANN is more successful than multiple linear regression in the prediction they performed.

PROPOSED SYSTEM

The purpose of this system is to determine the price of a house by looking at the various

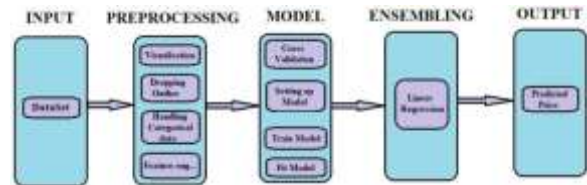
features which are given as input by the user. These features are given to the ML model and based on how these features affect the label it gives out a prediction. This will be done by first searching for an appropriate dataset that suits the needs of the developer as well as the user. Furthermore, after finalizing the dataset, the dataset will go through the process known as data cleaning where all the data which is not needed will be eliminated and the raw data will be turned into a .csv file. Moreover, the data will go through data preprocessing where missing data will be handled and if needed label encoding will be done. Moreover, this will go through data transformation where it will be converted into a NumPy array so that it can finally be sent for training the model. While training various machine learning algorithms will be used to train the model their error rate will be extracted and consequently an algorithm and model will be finalized which can yield accurate predictions. Users and companies will be able to log in and then fill a form about various attributes about their property that they want to predict the price of. Additionally, after a thorough

selection of attributes, the form will be submitted. This data entered by the user will then go to the model and within seconds the user will be able to view the predicted price of



the property.

OUTPUT & SYSTEM ARCHITECTURE



CONCLUSION

Real estate price prediction is commonly used to estimate the changes in housing price. This accurate prediction model would allow investors or house buyers to determine the realistic price of a house as well as the house developers to decide the affordable house price. This prediction data will help eventual buyers to have a better knowledge of the property. This will in turn help them to have better negotiation deals with the real estate agents.

REFERENCES

- [1] A. S. Temür, M. Akgün, and G. Temür, "Predicting Housing Sales in Turkey Using Arima, Lstm and Hybrid Models," *J. Bus. Econ. Manag.*, vol. 20, no. 5, pp. 920–938, 2019, doi: 10.3846/jbem.2019.10190.
- [2] A. Ebekoziën, A. R. Abdul-Aziz, and M. Jaafar, "Housing finance inaccessibility for low-income earners in Malaysia: Factors and solutions," *Habitat Int.*, vol. 87, no. April, pp. 27–35, 2019, doi: 10.1016/j.habitatint.2019.03.009.
- [3] A. Jafari and R. Akhavian, "Driving forces for the US residential housing price: a predictive analysis," *Built Environ. Proj. Asset Manag.*, vol. 9, no. 4, pp. 515–529, 2019, doi: 10.1108/BEPAM-07-2018-0100.
- [4] Choong Wei Cheng, "Statistical Analysis of Housing Prices in Petaling," of *Universiti Tunku Abdul Rahman*, 2018.
- [5] R. E. Febrita, A. N. Alfiyatin, H. Taufiq, and W. F. Mahmudy, "Data-driven fuzzy rule extraction for housing price prediction in Malang, East Java," *2017 Int. Conf. Adv. Comput. Sci. Inf. Syst. ICACSYS 2017*, vol. 2018-Janua, pp. 351–358, 2018, doi: 10.1109/ICACSYS.2017.8355058.
- [6] G. Gao *et al.*, "Location-Centered House Price Prediction: A Multi-Task Learning Approach," pp. 1–14, 2019, [Online]. Available: <http://arxiv.org/abs/1901.01774>.
- [7] T. D. Phan, "Housing price prediction using machine learning algorithms: The case of Melbourne city, Australia," *Proc. - Int. Conf. Mach. Learn. Data Eng. iCMLDE 2018*, pp. 8–13, 2019, doi: 10.1109/iCMLDE.2018.00017.
- [8] Y. Y. S. Song, T. Zhou, H. Yachi, and S. Gao, "Forecasting house price index of China using dendritic neuron model," *PIC 2016 - Proc. 2016 IEEE Int. Conf. Prog. Informatics Comput.*, pp. 37–41, 2017, doi: 10.1109/PIC.2016.7949463.
- [9] R. Aswin Rahadi, S. K. Wiryono, D. P. Koesrindartoto, and I. B. Syamwil, "Factors Affecting Housing Products Price in Jakarta Metropolitan Region," *Int. J. Prop. Sci.*, vol. 6, no. 1, pp. 1–21, 2016, doi: 10.22452/ijps.vol6no1.2.
- [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.