Machine Learning Based House Price Prediction

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Abstract

When seeking to purchase a new home, people are cautious with their spending plans and market research. The purpose of the article is to forecast house prices for those who do not own a home based on their financial resources and goals. It will be possible to estimate pricing by examining the aforementioned goods, fare ranges, and advancements. In the study, predictions are made using several regression approaches, such as Linear Regression and Decision Tree Regression, and valuable data is used to compute accuracy and R2 score values. All of the aforementioned strategies have been applied to a data set in order to anticipate house prices and determine which is the most effective. The goal of this article is to assist the seller in estimating the cost of selling a home. Perfectly and to assist individuals in determining the precise moment to start building a house.

1. INTRODUCTION

1.1 Introduction

There are numerous complex financial indicators and real estate fluctuates drastically. However, the development of technology offers a chance to steadily increase the value of a home and can also assist professionals in identifying the most useful indications to make better predictions. The primary goal of the HOUSE PRICE PREDICTION project was to determine which algorithm was most suited to accurately anticipate house prices with a low error rate while also making the best prediction possible. Given that the majority of individuals will eventually purchase or sell a home, this is an intriguing issue. We can learn more about the home market and improve our decision-making thanks to this issue as house price analysts. The ability to predict housing values is crucial for optimizing the return on a real estate option buy while minimizing risk.

2. Literature Survey

• [**Dr. Nageswara Rao Moparthi„Ch Mukesh, Dr. P. Viday Saga,“ Water Quality Monitoring System Using IoT”, An International Conference by IEEE, PP. 109 – 113 ,2018:**, When seeking to purchase a new home, people are cautious with their spending plans and market research. Based on their financial plans and objectives, the paper's goal is to estimate coherent housing prices for non-homeowners. It will be possible to estimate pricing by examining the aforementioned goods, fare ranges, and advancements. Various regression approaches, including multiple linear, ridge, LASSO, elastic net, gradient boosting, and ada boost regression, are used to provide predictions in this study. All of the aforementioned strategies have been applied to a data set in order to anticipate house prices and determine which is the most effective. The purpose of this document is to assist readers and sellers in accurately estimating a home's selling price. to forecast the precise moment at which to build a house. Physical conditions, concept, location, and other associated aspects that affect cost were also taken into account.

Adyan Nur Alfiyatin, Hilman Taufiq, Ruth Ema Febrita, Wayan Firdaus Mahmudy,Modeling House Price Prediction using Regression Analysis and Particle Swarm Optimization Case Study: Malang, East Java, Indonesia. (IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 8, No. 10, 2017: Every year, the cost of homes rises, necessitating the development of a system that can forecast future home prices. The ability to estimate house prices can be useful to both the developer and the customer in planning the best time to buy a home. The physical state, design, and location of a house are the three variables that affect its cost. Regression analysis and particle swarm optimization (PSO) are used in this study to forecast home values in Malang based on NJOP properties. Regression analysis is used to find the best coefficient in prediction, while PSO is used to choose the affect factors. The findings of this study demonstrated that PSO and combination regression are appropriate and yield the lowest prediction.

Nageswara Rao Moparthi,Dr. N. Geenthanjali " Design and implementation of hybrid phase based ensemble technique for defect discovery using SDLC software metrics"

The biggest challenge facing programmers is probably accurately measuring programming effort. Assessments made at the position stage have a significant level of error since requirements for the degree are not described in detail, but as the project moves forward and requirements are clarified, the accuracy and certainty of the appraisal increases. Selecting the appropriate programming effort estimating techniques is crucial for programming effort forecasting. On the assurance dataset, Artificial Neural Networks (ANN) and Support Vector Machines (SVM) have been used to forecast programming effort in this research.

3. OVERVIEW OF THESYSTEM

3.1 Existing System

The assessments that follow are taken into account because there are several complex financial indicators and the severe fluctuations in real estate. The majority of brain circuits that anticipate significant learning are multi-layered. It uses perhaps a few hidden layers. The main benefit is that they can be applied to challenging or complex problems. This system is challenging to construct and quite complex. User must be well-versed in neural networks. Increase the number of nodes being analyzed to gather additional data. Use the suggested system to anticipate housing prices in order to streamline the current system..

3.1.1 Disadvantages of Existing System

- Less Accuracy.
- Low Performance.
- High complexity.

3.2 Proposed System

The suggested methodology makes use of an effective supervised learning technique to forecast home prices. Every year, home prices rise, necessitating the development of a method to forecast home prices. With a new set of parameters and a new methodology, the price of land is forecasted. Additionally, we forecasted the compensation for the property's settlement. Numerous facets of daily life can be understood through mathematical correlations. We get more understanding when such correlations are expressed as exact numbers. The development of technology offers the chance to achieve constant financial gains in real estate and can also assist professionals in identifying the most illuminating indications to create more accurate predictions. Regression aims to describe the relationship between a single numerical dependent variable and one or more independent variables. independent variables with numbers. Both the developer and the buyer can benefit from house price forecast, which can assist them decide when is the best time to buy a home. proposed used effective regressor techniques to reach expected forecasted results. By utilizing our tool, a user may predict the price of a house with ease.

3.3 Methodology

In this project work, I used five modules and each module has own functions, such as:

1. System Module
2. User Module

3.3.1 Dataset Collection:

The dataset containing images of the chest X-ray images with the pneumonia affected and without pneumonia i.e., normal are to be classified is split into training and testing dataset with the test size of 30-20%.

3.3.2 Preprocessing:
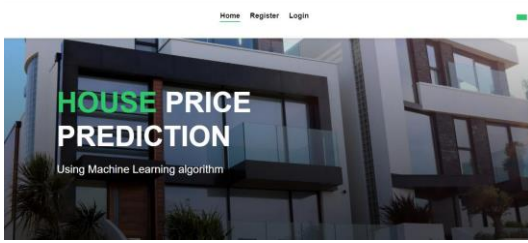
Resizing and reshaping the images into appropriate format to train our model. .

3.3.3Training:

Use the pre-processed training dataset is used to train our model using CNN algorithm along with some of the transfer learning methods..

3.3.4 Classification

The results of our model is display of X-ray images are either with pneumonia or normal..

3.3.5 User Module

Upload Image

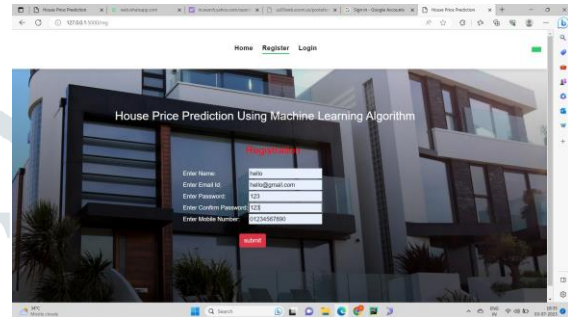The user must upload an image which needs to be classified.

View Results

The classified image results are viewed by user.

3 Architecture

Fig 1: Frame work of proposed method

Above architecture diagram shows three stages of data flow form one module to another module. Data collection, preprocessing, and algorithm training.
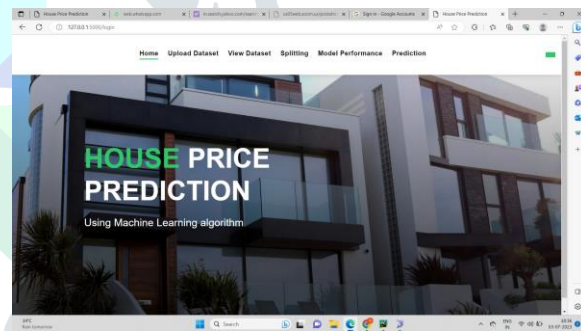
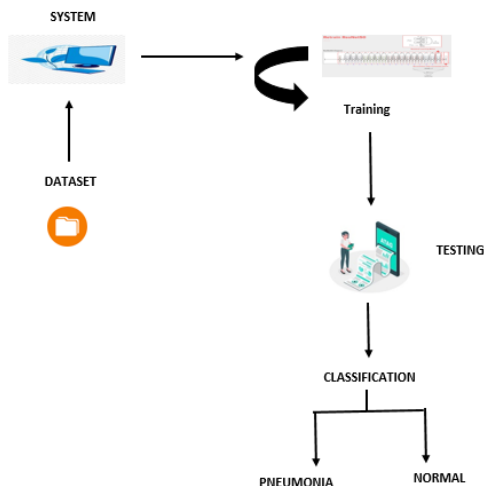## 4 RESULTS SCREEN SHOTS

Home Page:

Upload image:

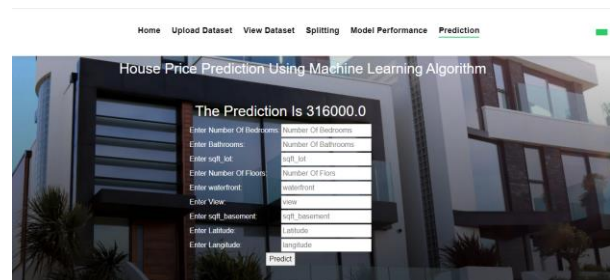**Choose options:**

Predict Result:

7. CONCLUSION

✓   Using deep learning, we correctly identified the photos of a person's chest X-ray images as either pneumonia or normal in this study. We used a dataset of chest X-ray pictures of two types (pneumonia afflicted and normal) and trained it using CNN as well as some transfer learning methods. Following the training, we tested the system by uploading a picture and classifying it.

Future Enhancement

✓   This can be used in the future to readily define the sorts of different infections, making it easier to identify infections in their early stages and cure them.

8. References

[1] WHO Pneumonia. World Health Organization. (2019), https://www.who.int/news-room/fact-sheets/ detail/pneumonia

[2] Neuman M., Lee E., Bixby S., Diperna S., Hellinger J., Markowitz R., et al. Variability in the interpretation of chest radiographs for the diagnosis of pneumonia in children. Journal of Hospital Medicine. 7, 294–298 (2012) https://doi.org/10.1002/jhm.955 PMID: 22009855

[3] Williams G., Macaskill P., Kerr M., Fitzgerald D., Isaacs D., Codarini M., et al. Variability and accuracy in interpretation of consolidation on chest radiography for diagnosing pneumonia in children under 5 years of age. Pediatric Pulmonology. 48, 1195–1200 (2013) https://doi.org/10.1002/ppul.22806 PMID: 23997040

[4] Kermany D., Zhang K. & Goldbaum M. Labeled Optical Coherence Tomography (OCT) and Chest X-ray Images for Classification. (Mendeley, 2018)

[5] Lal S., Rehman S., Shah J., Meraj T., Rauf H., Damasˇevičius R., et al. Adversarial Attack and Defence through Adversarial Training and Feature Fusion for Diabetic Retinopathy Recognition. w

[6] Rauf H., Lali M., Khan M., Kadry S., Alolaiyan H., Razaq A., et al. Time series forecasting of COVID-19 transmission in Asia Pacific countries using deep neural networks. Personal and Ubiquitous Computing. pp. 1–18 (2021) https://doi.org/10.1007/s00779-020-01494-0 PMID: 33456433

[7] Deng J., Dong W., Socher R., Li L., Li K. & Fei-Fei, L. Imagenet: A large-scale hierarchical image database. 2009 IEEE Conference on Computer Vision and Pattern Recognition. pp. 248-255 (2009)

[8] Dalhoumi S., Dray G., Montmain J., Derosière, G. & Perrey S. An adaptive accuracy-weighted ensemble for inter-subjects classification in brain-computer interfacing. 2015 7th International IEEE/EMBS Conference on Neural Engineering (NER). pp. 126-129 (2015)

[9] Albahli S., Rauf H., Algosaibi A. & Balas V. AI-driven deep CNN approach for multi-label pathology classification using chest X-Rays. PeerJ Computer Science. 7 pp. e495 (2021) https://doi.org/10.7717/ peerj-cs.495 PMID: 33977135.