Predicting Housing Prices for Future Prospective Buyers and Sellers.

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Project Overview

1. The Problem Area

This project addresses one of the biggest challenges in the housing market. Today, a lot of people still find it hard selling and buying houses, because they are faced with countless things to do to make these types of transactions. One of these things is getting a house appraisal. This project could address this problem and provide a way to know how much properties cost without having to pay another individual to do so. The key challenges here are

- Minimizing the in-between costs when buying and selling properties.
- Ensuring appraisals are accurate value wise
- Understanding the market, and using this information to accurately predict sales
- Helping prospective buyers and sellers optimize their business

2. Affected Stakeholders

- The primary users experiencing these problems range from homeowners to real estate agents and prospective buyers. These people would benefit from having a program that appraises homes for them depending on the time, location and other geographic factors. They would also be able to have more power in their decision making with regard to sales.
- Prospective real estate companies and agents
- Banks and policy makers in the housing market

3. Proposed House Appraisal Solution

Machine learning can be a useful tool in predicting the prices for homes. By feeding the computer with past information on how much the homes were sold for, and updating the system with new updates like geographic factors that could affect these prices like new amenities, how gentrifies the area has become, proximity to the beach, hospitals or other attractive incentives we could be able to accurately predict how much homes could cost.

4. The Impact

The societal and business value of this project could be very vast. Currently in the US alone, the task of predicting housing costs or real estate prices is handled by real estate economists, market analysts and financial forecasters who use data analysis and economic models to predict trends. With this project, we could be able to make their work a lot easier and even give normal civilians the ability to make these predictions accurately, making their budgeting a lot smoother.

5. The Data

Several potential datasets for this project include:

- Historical housing prices for the US, which could be sourced from US databases.
- Gentrification plans according to surveyed regions which could be gotten from the local community boards and stations.
- Housing market records and costs

DATA DICTIONARY.

Variable	Description	Type
Ocean proximity	How close the house is to ocean	Description
Longitude and latitude	Exact location of property	Float
Housing median age	How old the property is	Float
Total rooms	Number of rooms in property	Float
Population	Head Count in area	Float

This dataset allows for a comprehensive analysis of the factors influencing house pricing, enabling the accurate prediction of costs.

Methodology

- Data preprocessing and feature analysis
- Implementation of geographical amenities
- Visualization of model performance and forecasts.

Results

The project generates visualizations comparing the price ranges of different properties.

- Proximity to the bay area is used as key factor
- Home age, population in the area and median house prices were also used.

Limitations

- It would be a challenge to rapidly factor in gentrification or other amenity updates which could significantly affect price.
- Geographically, global warming and other climatic changes might cause significant changes in pricing.
- The system would have to be set up in such a way that changes would be made on a regular basis, and live agents would have to be sent to infiltrate communities to get a feel of what living in those areas actually entails.

Future Work

- Expand the dataset to include all neighborhoods and their geographical locations across the United States.
- Incorporate additional weather variables and geographical factors
- Comparing our generated prices with real life appraisal prices to check for accuracy.
- Investigate the impact of long-term homes on their pricing
- Utilize computer vision analysis of satellite images to predict future home prices, identify optimal sites for home buyers