

House Price Prediction using Genetic Algorithm

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Abstract: Accurately predicting house prices is crucial for various stakeholders in the real estate industry. This paper presents a house price prediction methodology using genetic algorithms, aimed at improving prediction accuracy and reliability. The study utilizes a combination of machine learning techniques and optimization algorithms to optimize the prediction process. The methodology involves several key steps, including data preprocessing, formulation of a fitness function, and application of genetic operators such as selection, crossover, and mutation. The genetic algorithm optimizes the prediction model, allowing for accurate and reliable house price predictions. Results from experiments conducted on a dataset demonstrate the effectiveness of the approach. Evaluation metrics, including mean absolute error (MAE), root mean squared error (RMSE), R-squared (R^2), and accuracy within a $\pm 5\%$ range, validate the accuracy of the predictions. The genetic algorithm-based approach outperforms a baseline model, showcasing its superiority in terms of prediction accuracy. The paper highlights the implications of the findings for the real estate industry and identifies potential areas for future research. Incorporating additional features, comparing different optimization algorithms, analyzing non-linear relationships, evaluating on real-world datasets, integrating external data sources, and conducting long-term price trend analysis are suggested as potential avenues for further investigation.

Keywords: house price prediction, genetic algorithms, machine learning, optimization, accuracy, real estate industry, prediction model.

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