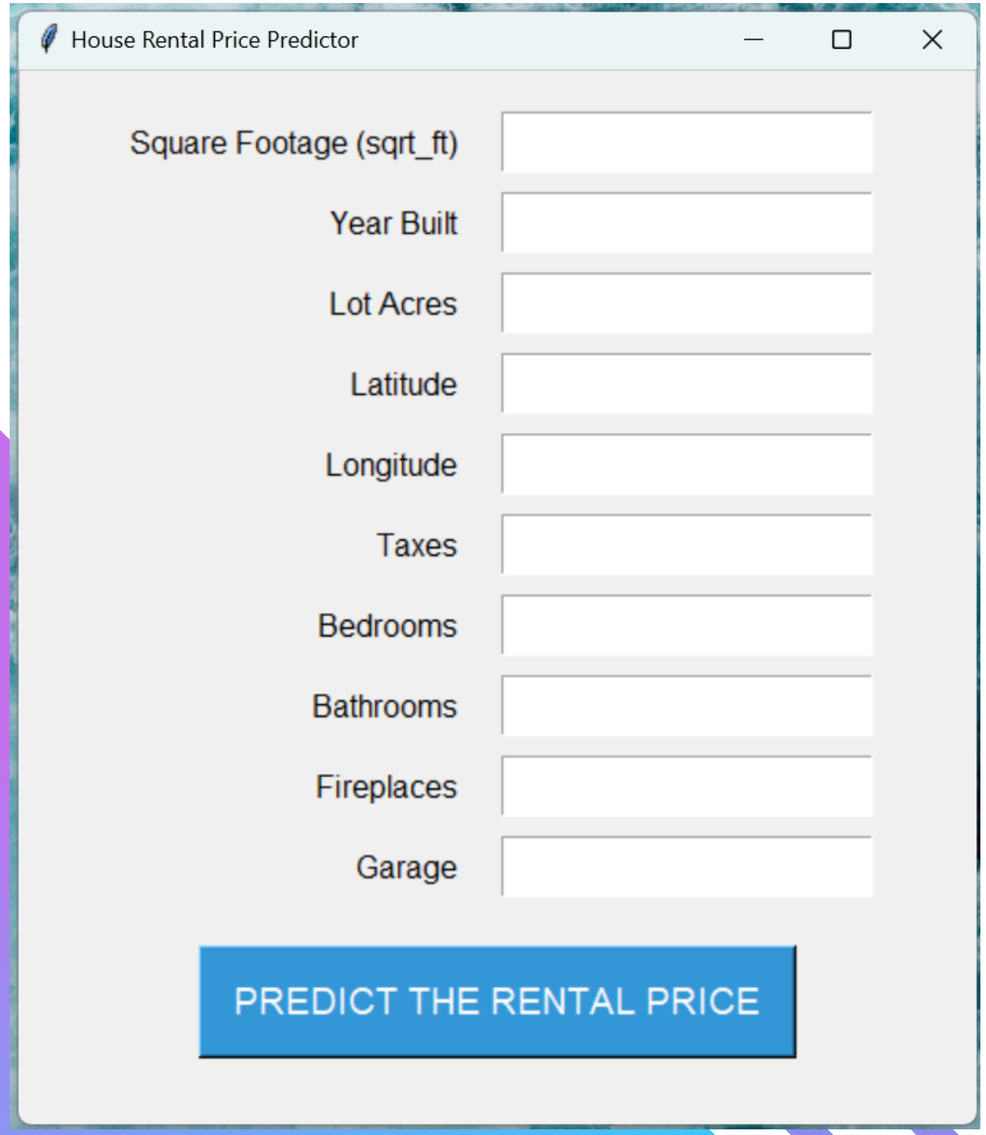
TECH CONSULTING

RENTAL HOUSE PRICE SIMULATOR

ABAROUDI Younes

09/09/2024



About the project

The goal of the Rent Value Estimator is to provide homeowners, real estate investors, and rental management companies with an estimation of the monthly rental income a property could generate, based on a percentage of the property's value (here assumed to be 0.4% of the house's sale value as defined in the Class with the GenG Team). This estimator helps answer critical business questions such as:

- Should I rent or sell my property?
- How much monthly rental income can I expect from my house?
- Is it worth managing this property for rental income?

AGENDA

01 EDA and Feature Engineering

02 Model Evaluation

03 Demo for the application

04 Summary

EDA and Feature Engineering

year_sqrt

- Created by multiplying the house's year built with square footage to capture interaction effects between them

inverse_house_age

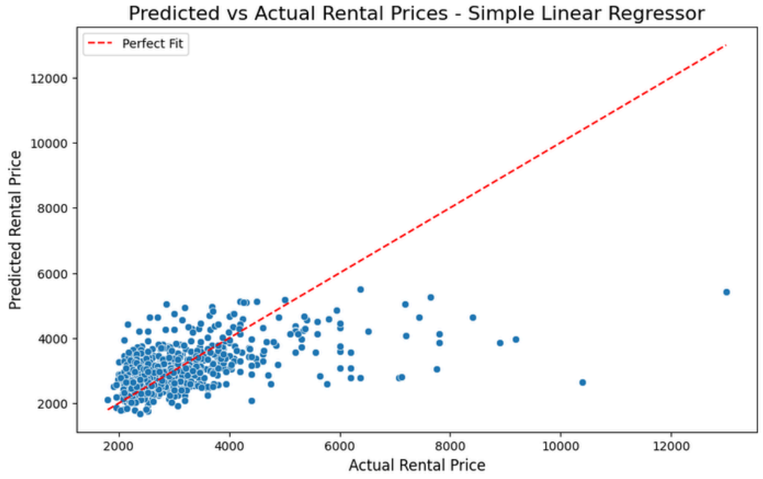
- Created to capture potential non-linear relationships between house age and its effect on rental or sale

Features Selection and scaling

- 12 features selected
- 10 features scaled using the MinMax method

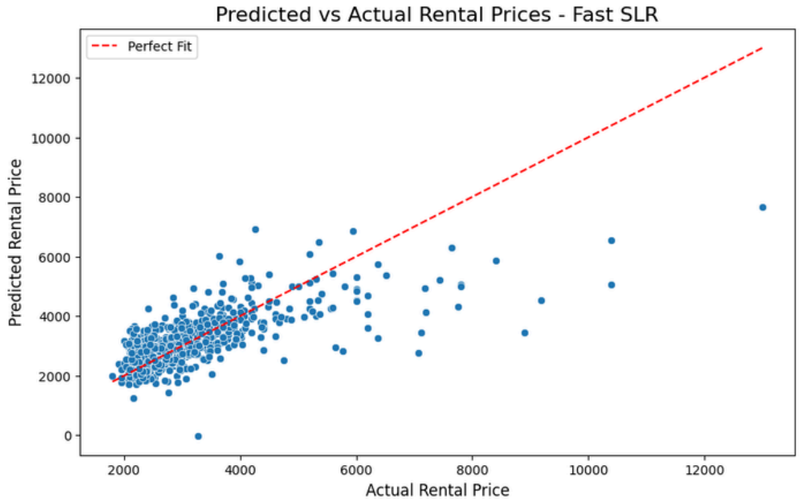
Model Evaluation (1/2)

SIMPLE LINEAR REGRESSION



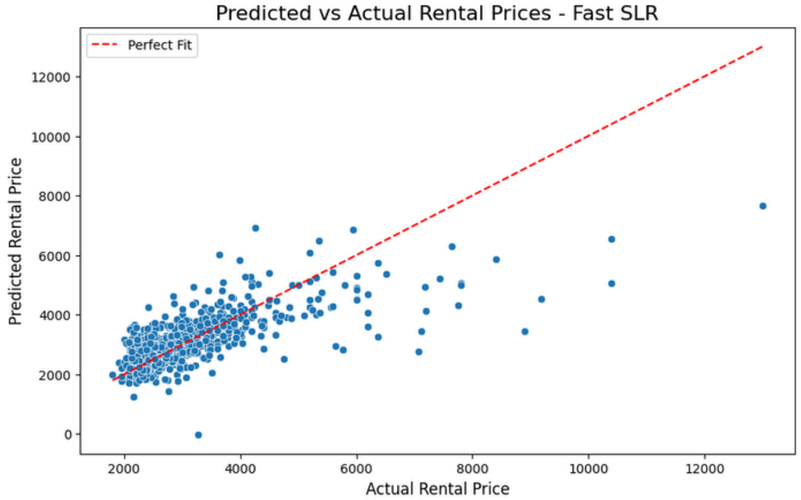
OLS: 456962.3588, R-squared: 0.2669, MAPE: 18.3741

FAST SIMPLE LINEAR REGRESSION



OLS: 304170.8158, R-squared: 0.512, MAPE: 15.6461

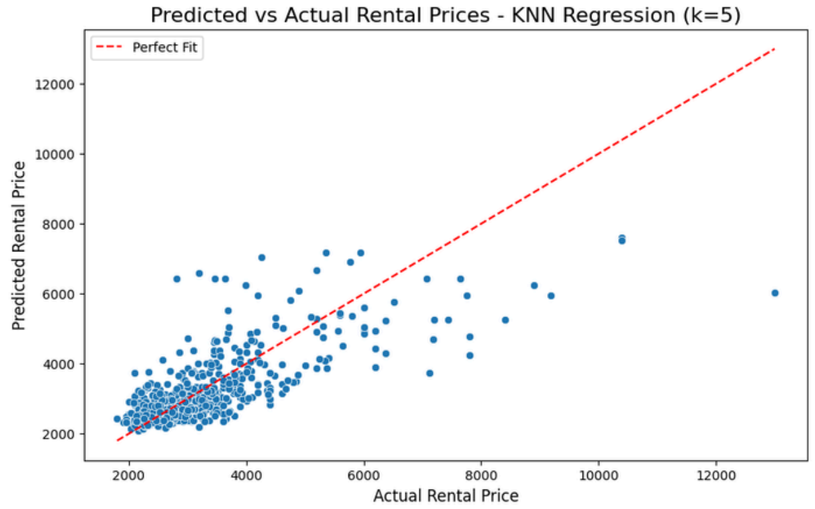
MULTI VARIATE LINEAR REGRESSOR

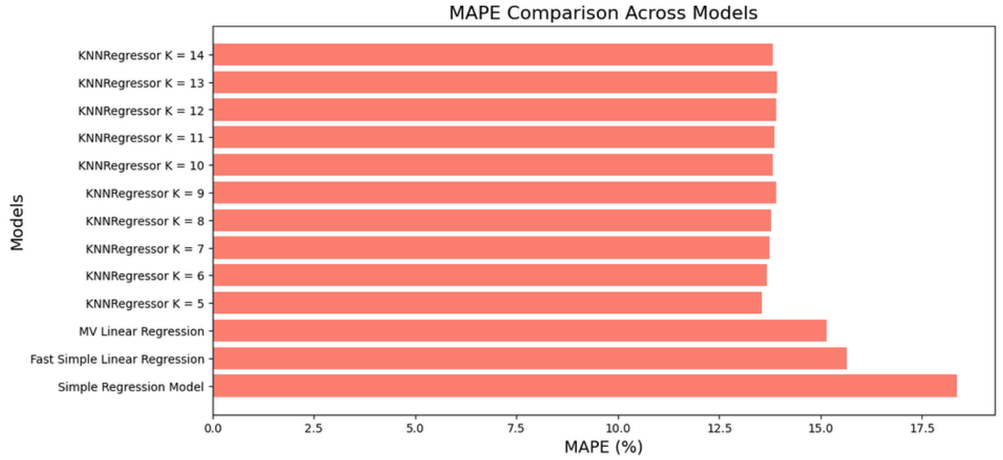


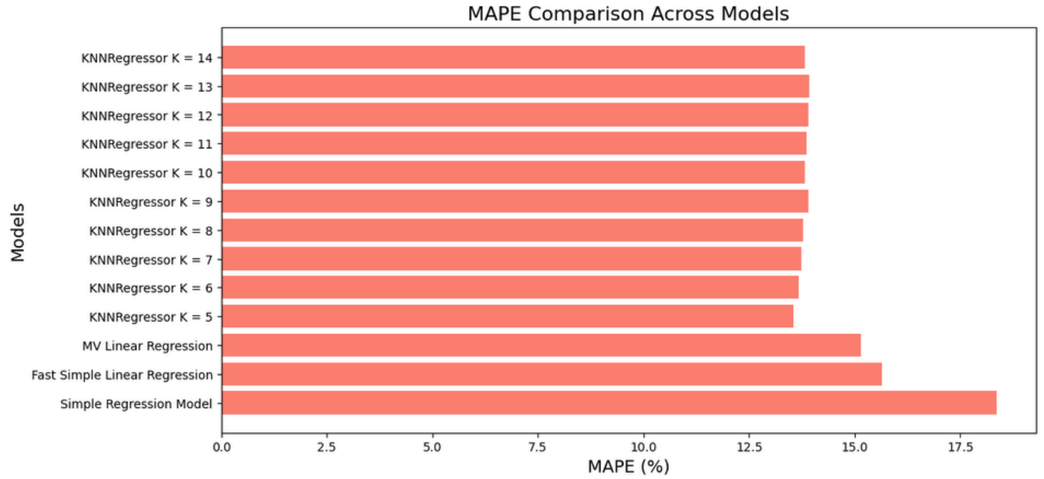
OLS: 306540.3406, R-SQUARED: 0.5082, MAPE: 15.1413

Model Evaluation (2/2)

KNN REGRESSOR

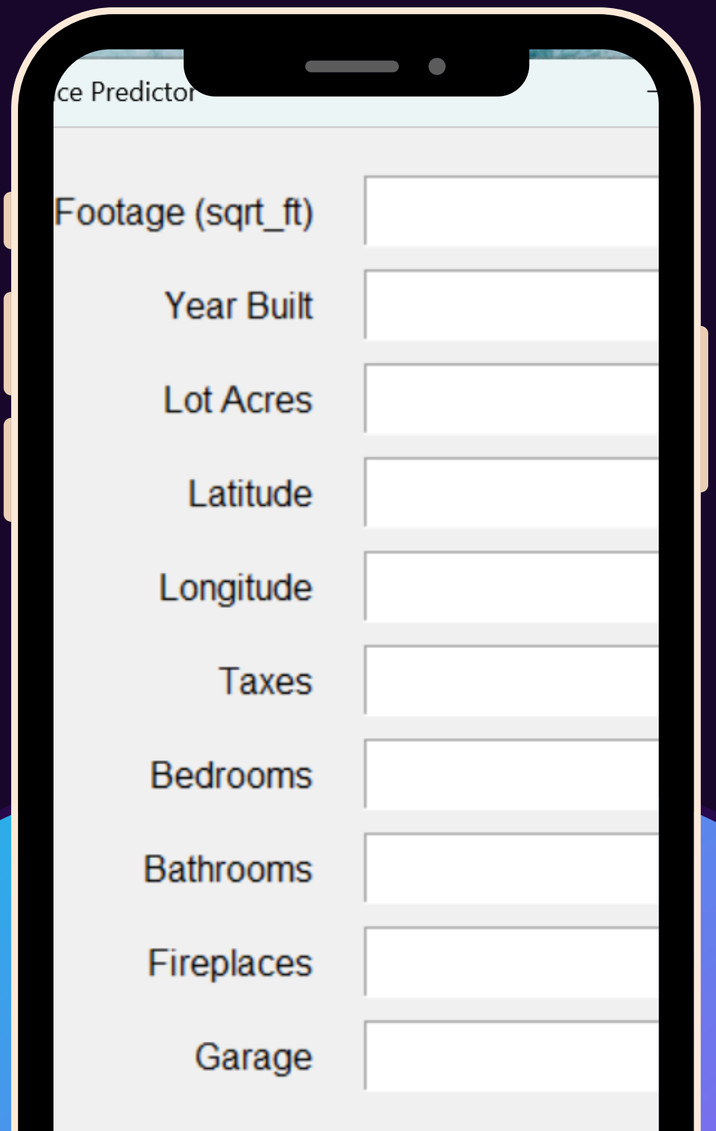






KNN Regressor with K = 5 shows the best performance:

- R-squared = 0.5987
- MAPE: 13.548
- OLS: 250140.3955
- We chosed this model for our application as it has better accuracy and less errors.



Demo for the Rental House Simulator

- **Tools**

  Tkinter
  Python
  Numpy
  Pandas

- **Why choose our app ?**

  - Maximize Your Property's Value
  - Make Informed Decisions
  - Get Instant Results

SUMMARY

The app implements a KNN regression model to predict rental prices based on historical data, offering practical insights for property investors.

01

Key Metrics

- KNN of K=5 has R-squared = 0.5987, MAPE = 13.55%.
- Outperforms the Simple Regression (R-squared = 0.2669) and Multiple Variable Linear Regression (R-squared = 0.5082).

02

Optimal Solution

KNN Regressor with K = 5 has the best performance

03

User-friendly interface

Easy-to-use tool for real estate investors to get fast, accurate price estimates.

RENTAL HOUSE PRICE SIMULATOR

THANK YOU