Washington, DC

HOUSING MARKET ANALYSIS

By Jayla Haskins

KEY FINDINGS

PROPERTY PRICE FACTORS

- Bedroom Count
- Property Size
- Neighborhood Characteristics

RECOMEMMENDATIONS

- Leverage Random Forest
- Focus on Data Enrichment

OBJECTIVE:

- Automate Real Estate Processes with Chatbots

Addressing Business Problems

- Identifying Pricing Trends
- Understanding factors influencing pricing
- Automating client interactions through chatbots
- Use machine learning to predict property prices based on key features

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OVERVIEW OF THE WASHINGTON D.C. HOUSING MARKET

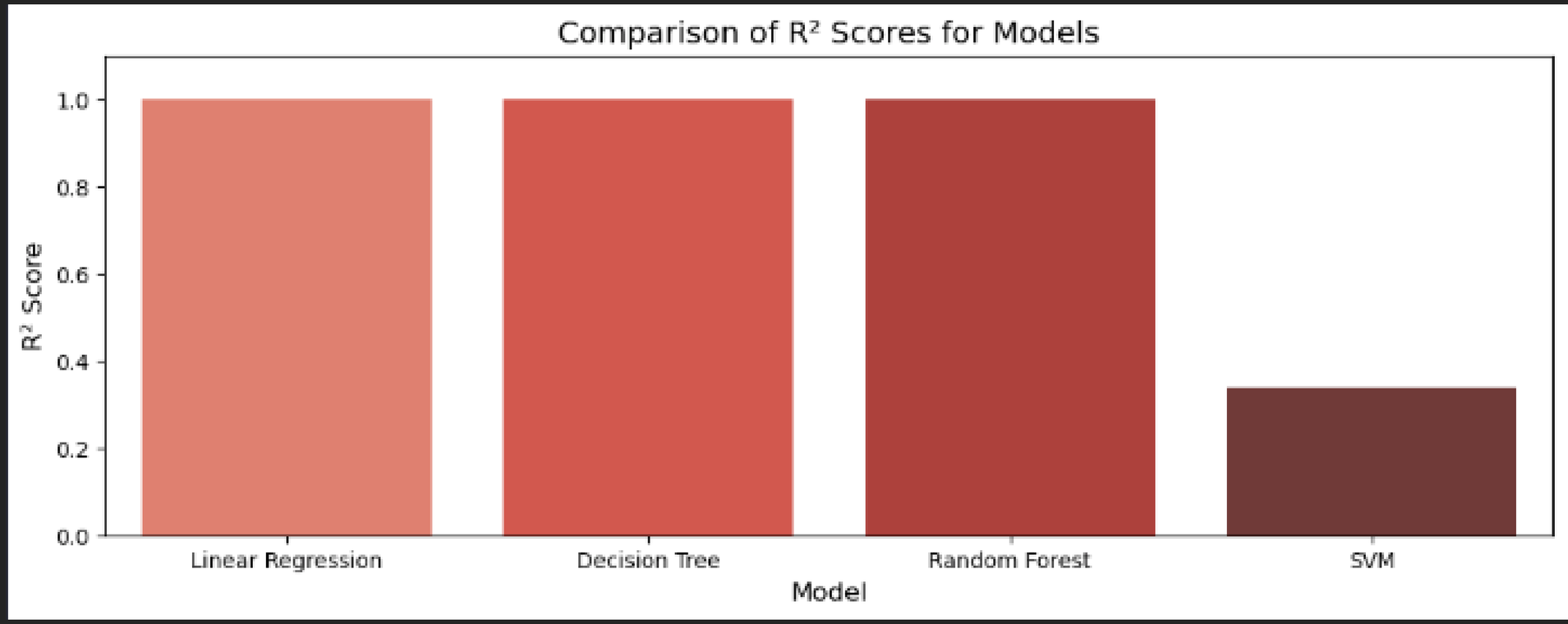
Dataset from over 5,000 listings on Zillow

KEY FEATURES

property types, prices, square footage, amenities

FOCUS

pricing trends, neighborhood comparisons, and property features



CLASSICAL ML APPROACH

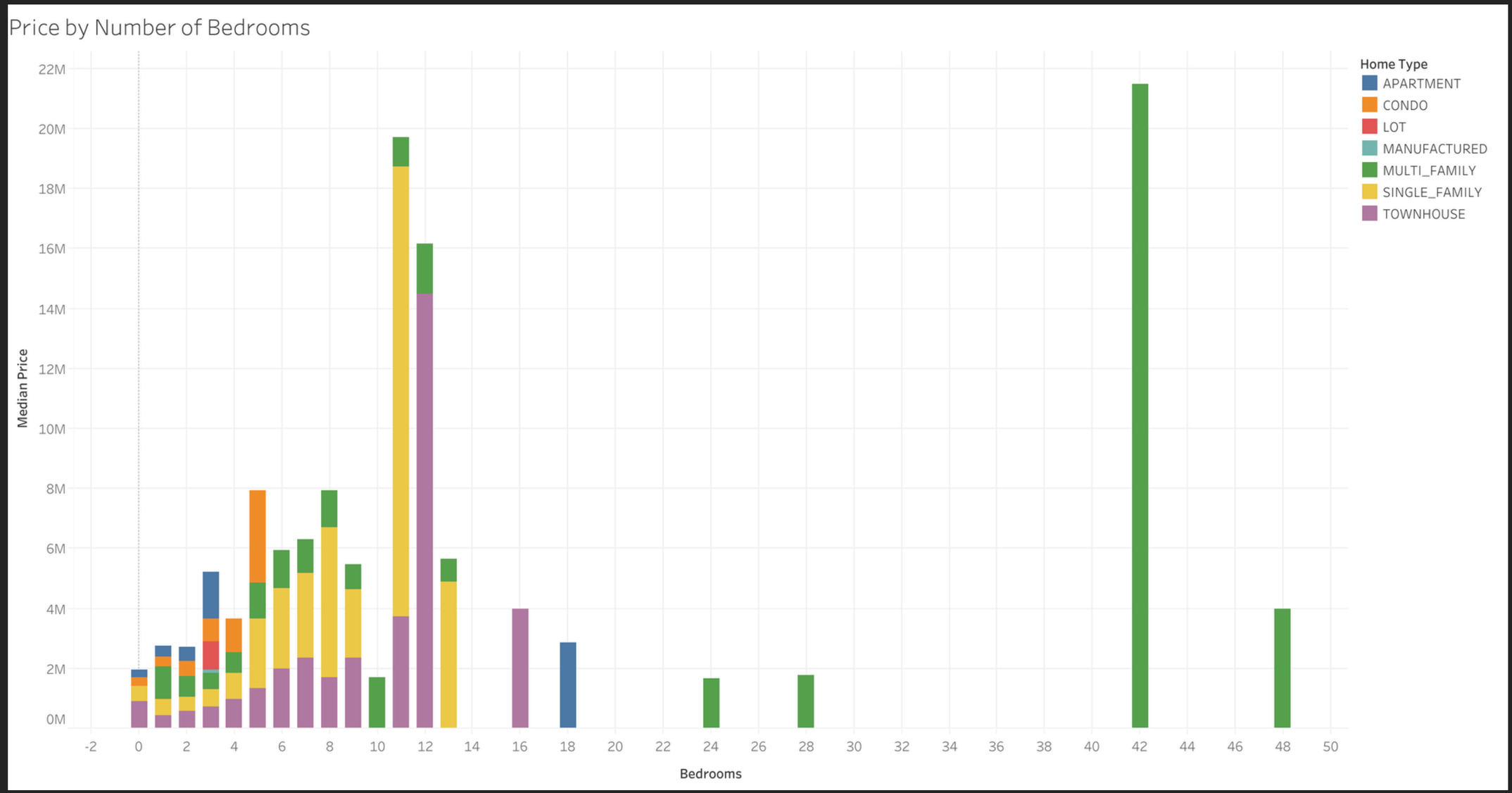
- Models: Linear Regression, Decision Tree, Random Forest.
- Light dataset achieved perfect accuracy
- Heavy dataset: Random Forest performed best with 80%

Image shows light dataset model performance

DEEP LEARNING APPROACH

- Sequential neural network model attempted.
- Challenges faced: poor performance with R^2 40%
- Need for more data preprocessing and larger datasets.

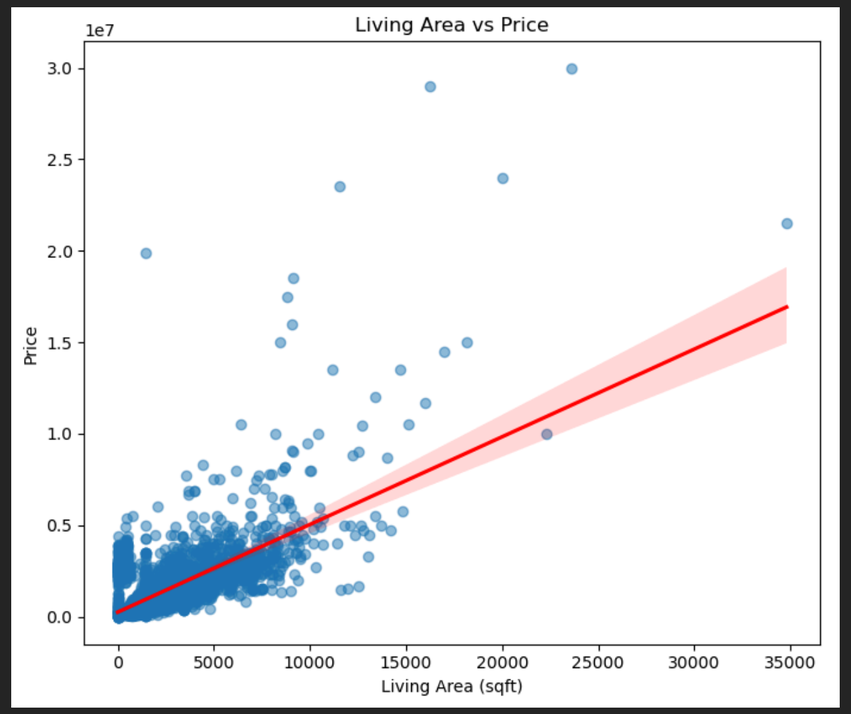
Price vs. Bedrooms

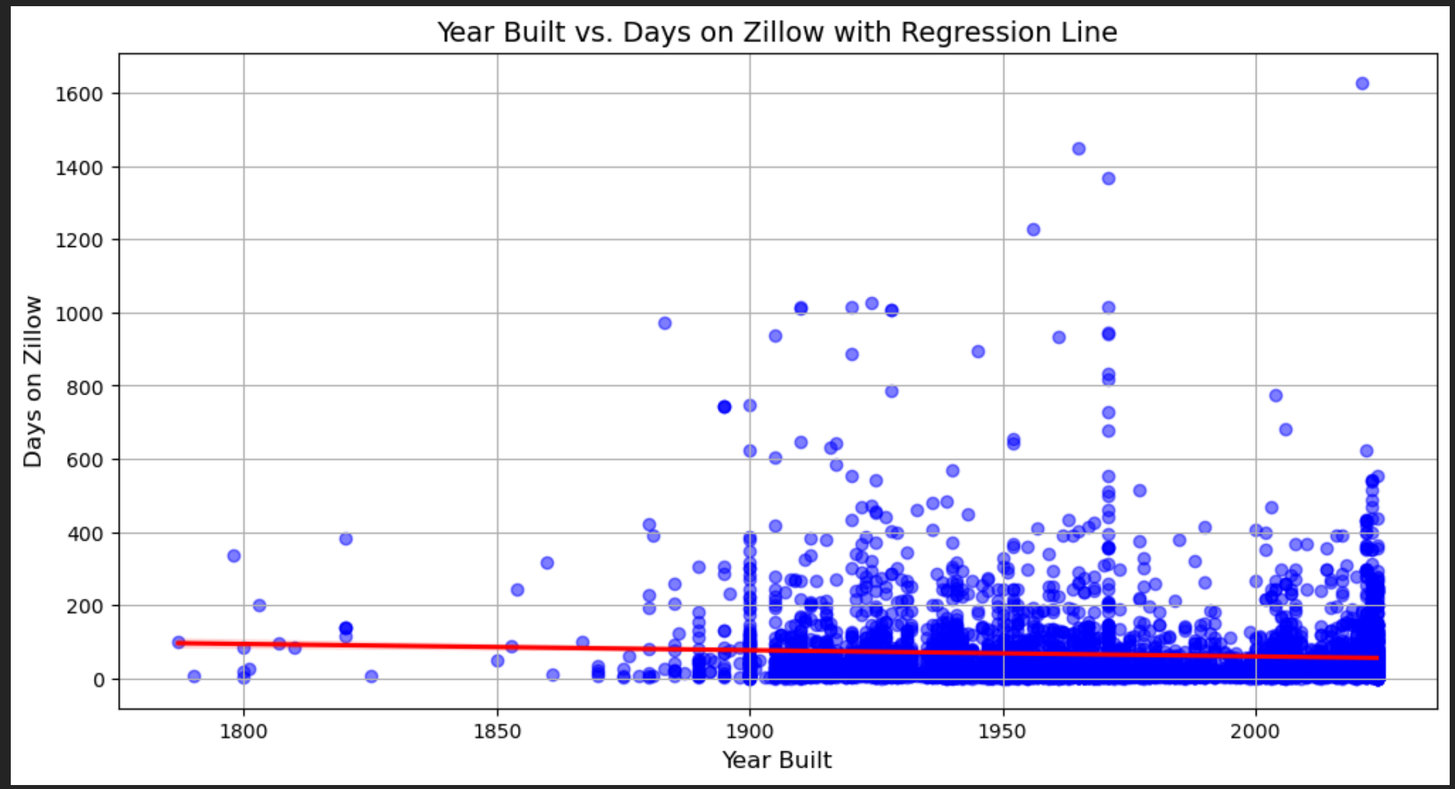


Property Size vs. Price

Inferential Analysis Outcomes

- Significant differences in year built vs how fast the house sells
- Positive correlation between living area and price.
- Statistical tests used: pearson correlation & ANOVA test





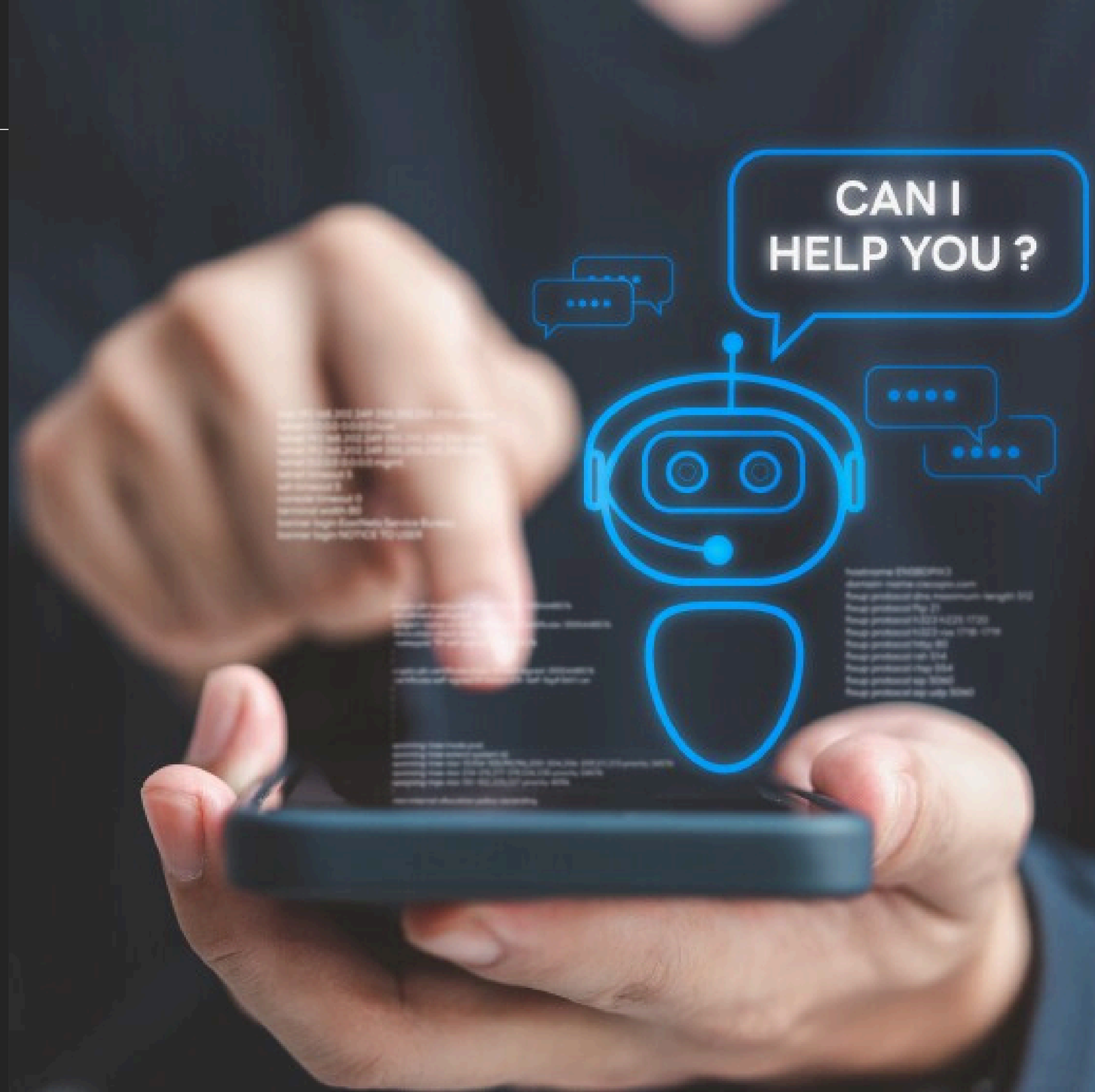
Chatbot Use Case

KEY FEATURES:

- Identifies serious buyers through automated qualifying questions.
- Answers FAQs without human intervention.
- Provides price predictions and neighborhood insights.

IMPACT:

Reduces human workload, enhances client engagement, and improves efficiency



Next Steps & Recommendations

- Leverage Random Forest for more accurate price predictions.
- Refine data and expand features for the chatbot.
- Enhance NLP capabilities for better user interaction.

CONTACT DETAILS

Thank you for listening

GITHUB

Github Repo

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