

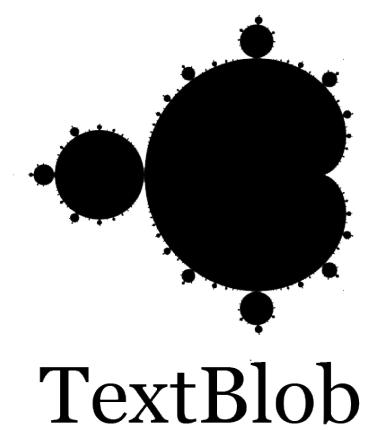
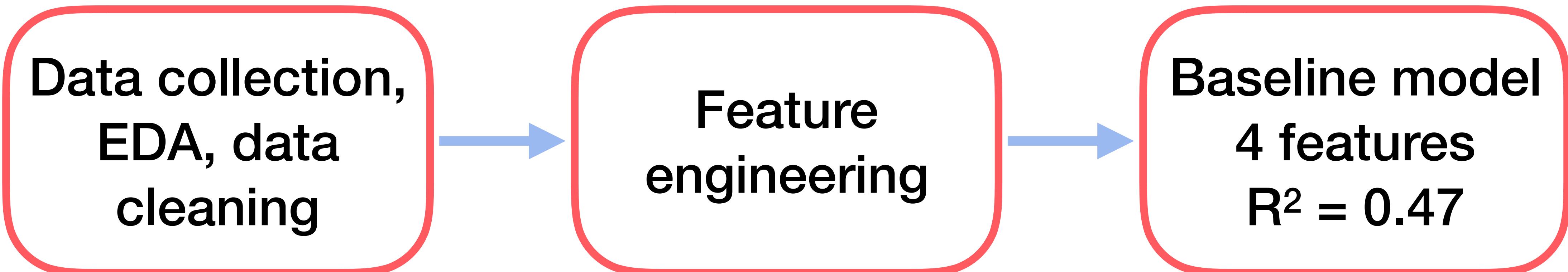
The background image is a wide-angle, aerial photograph of the Chicago skyline at night. The city is bathed in a warm, golden glow from thousands of illuminated windows in the skyscrapers. In the center-left, the Willis Tower (formerly Sears Tower) stands tall with its distinctive spire. To its right, the Chicago Tribune Tower is visible with its unique Art Deco spire. The foreground shows a dense grid of lower buildings and streets, while the horizon line is filled with more of the city's iconic architecture.

# Predicting Chicago Airbnb Pricing

Xuping Wang

- **Question:** What's the fair market rent?
- **Goal:** Chicago Airbnb pricing model





pandas

$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$



- Created 8 new features, including:
- Median household income by ZIP code
  - Distance to nearest “L” station

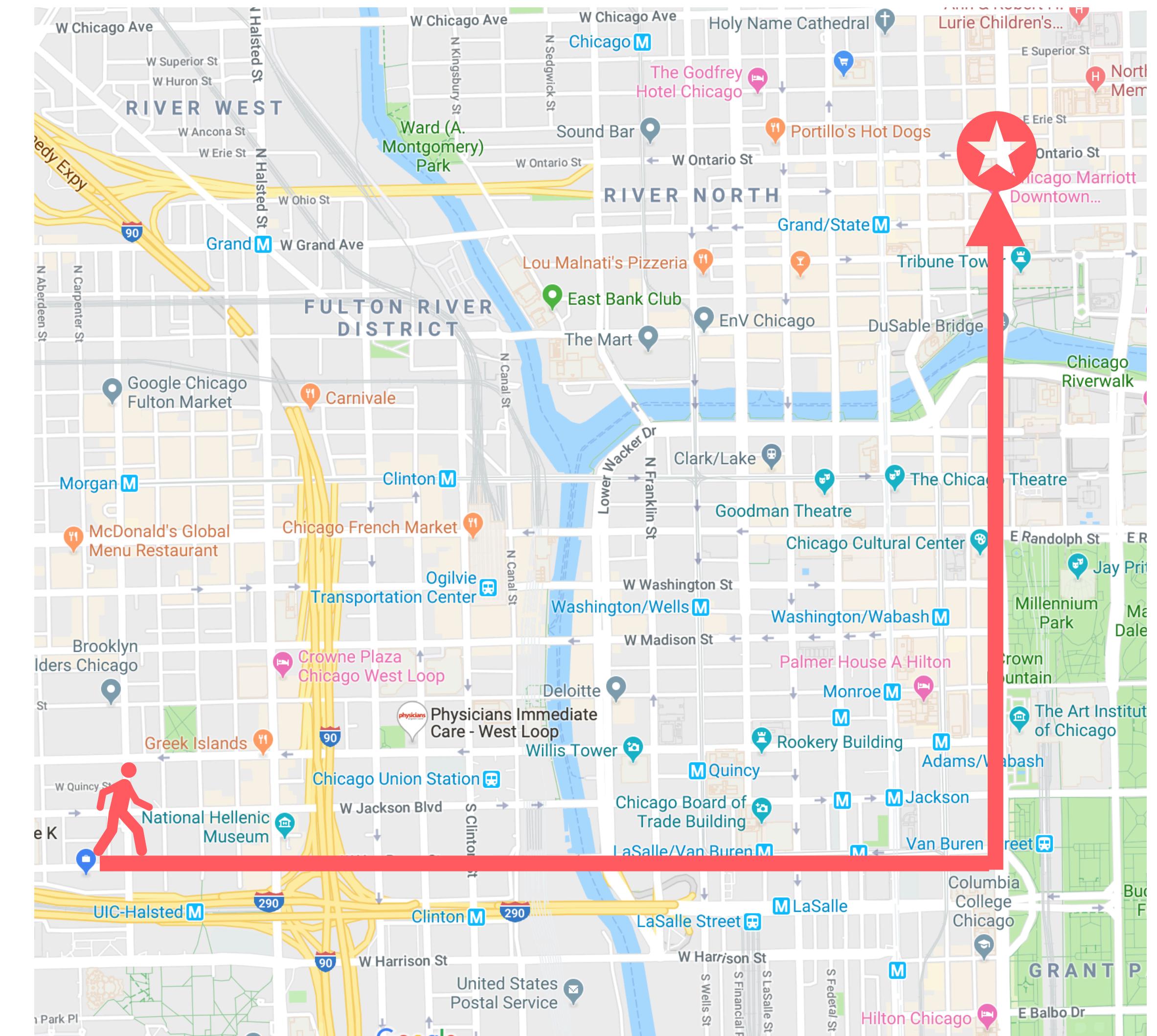
# Feature: Rooms And Room Types



- Room numbers: Each additional bedroom adds **\$22**
- Room types: Entire place costs **\$46** more than private rooms

# Feature: Distance To City Center

- Calculated Manhattan distance from listing apartment to Magnificent Mile
- \$7 cheaper for every mile away from city center



# Feature: Guest Review Sentiment

- Use Textblob to calculate **sentiment score** of reviews

Positive review:

“It was a great time and experience!! Great location!!”

Sentiment score: 1.0

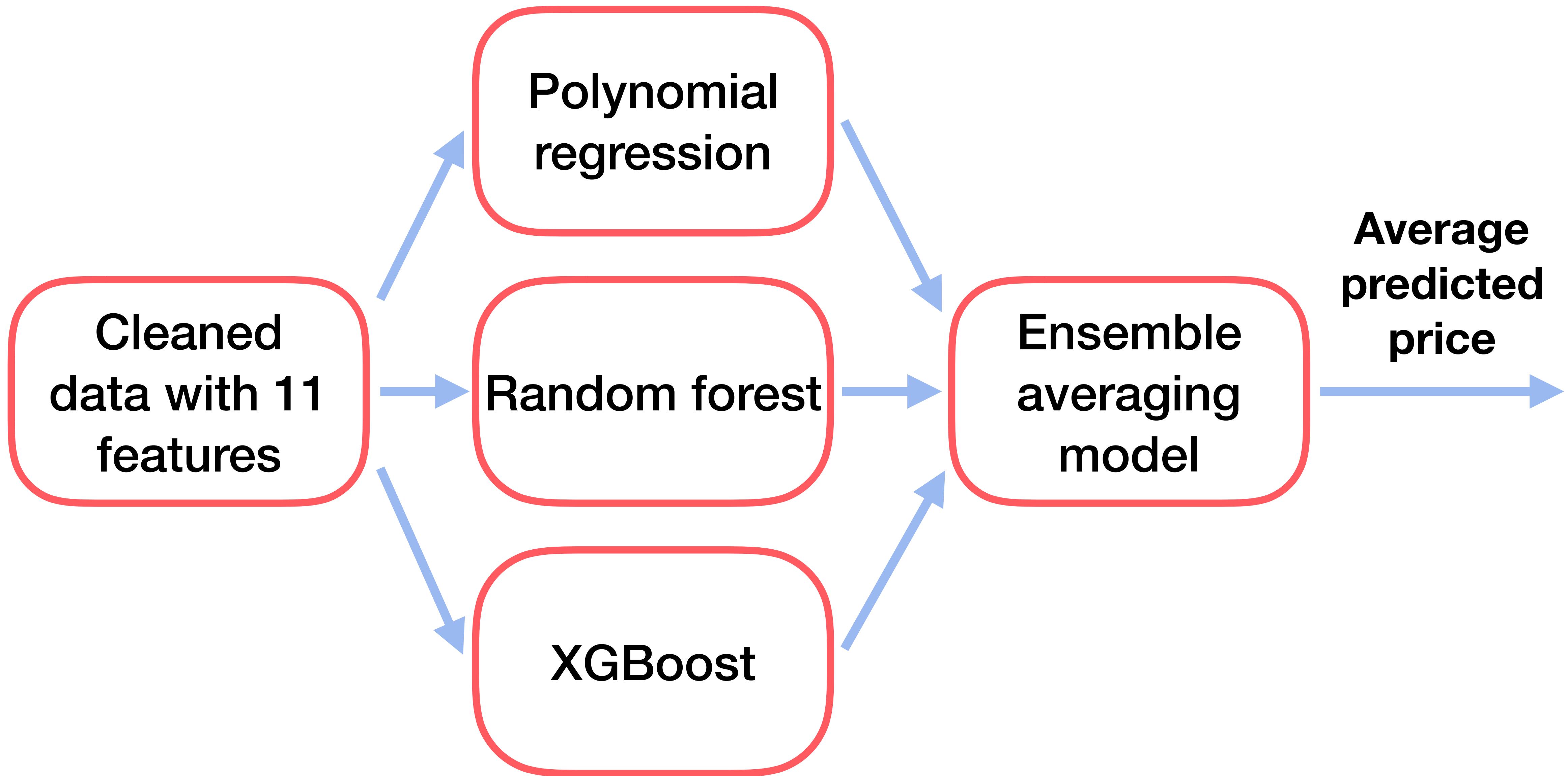
Negative review:

“Experience has been horrible. Bathroom was disturbingly filthy.”

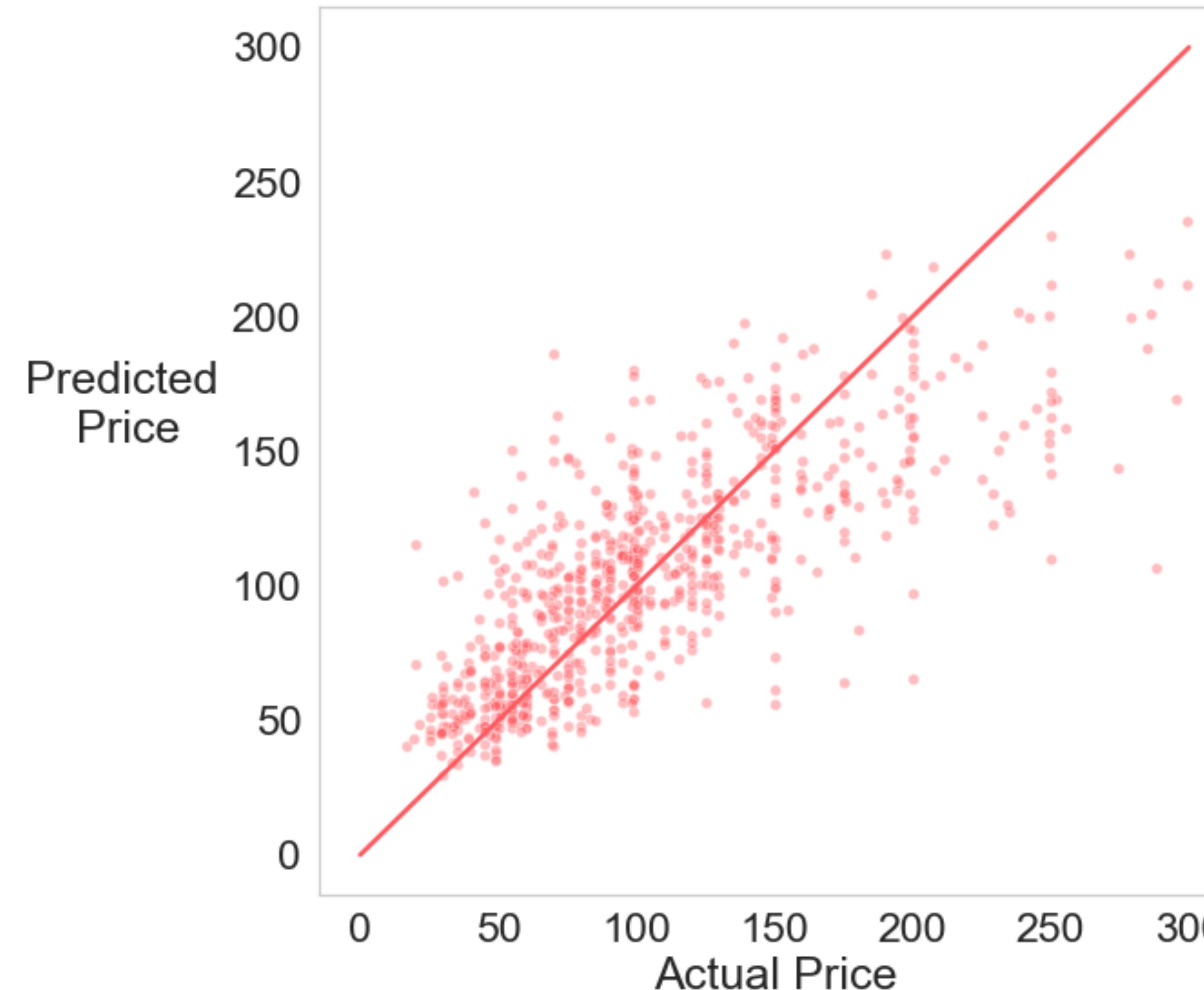
Sentiment score: -0.9

- Higher sentiment score predicts higher pricing

# Ensembling improves $R^2$ to 0.59



# Good Prediction On Lower To Middle Price Range



# Conclusion

- Result: I paid 30% less than the prediction
- Helps guests find the best deal
- Helps hosts price their apartment



# Thank You

## Xuping Wang



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