

## Summary

**Problem:** Banks require quick, accurate home valuations to expedite loan approvals and minimise the risk of incorrect pricing.

**Solution:** Implemented machine learning models, including K-Nearest Neighbors (KNN) Classifier and KNN Regressor, to predict house category and prices based on property features such as location(longitude and latitude), size (lot acres, square feet), number of bedrooms, number of bathrooms, garage, and fireplaces.

**Tools Used:** NumPy and Pandas.

### Model Performance:

- **KNN Classifier:** Achieved a near-perfect accuracy of **99.87%**, making it highly reliable for categorising properties.
- **KNN Regressor:** Performed with a Mean Absolute Percentage Error (MAPE) of **5.35%**, ensuring precise price predictions with minimal deviation from actual values.

### Benefits:

- Faster, data-driven loan approvals.
- Reduced dependency on manual appraisals, lowering costs.
- Greater accuracy in property pricing, minimising financial risks for banks.

**Recommendation:** Use KNN for its high performance in both classification and regression tasks. It provides banks with a robust, efficient tool for evaluating home values.

**Conclusion:** The model will significantly enhance the loan approval process by improving speed, accuracy, and operational efficiency, benefiting both banks and their customers.