MACHINE LEARNING MODEL FOR

House Rent Prediction

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- **Goal:** Predict monthly house rent based on property features using machine learning.
- **Key Skills Used:** Data cleaning, EDA, feature engineering, regression modeling, visualization.

INSIGHT

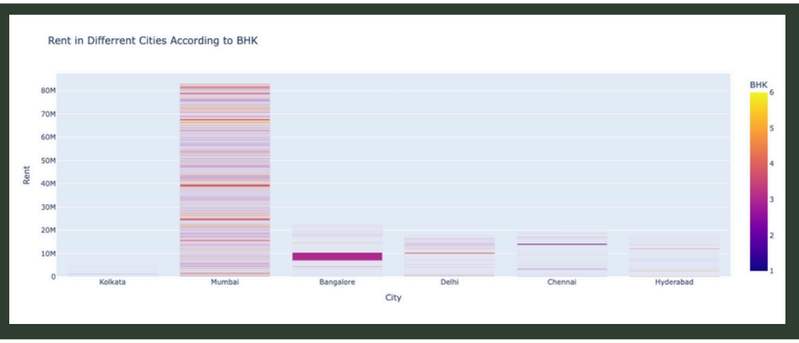
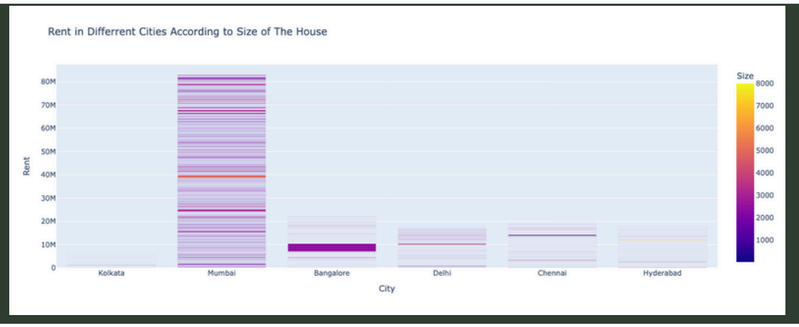
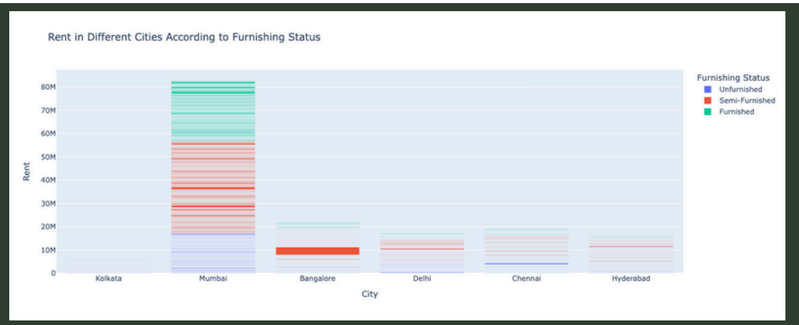
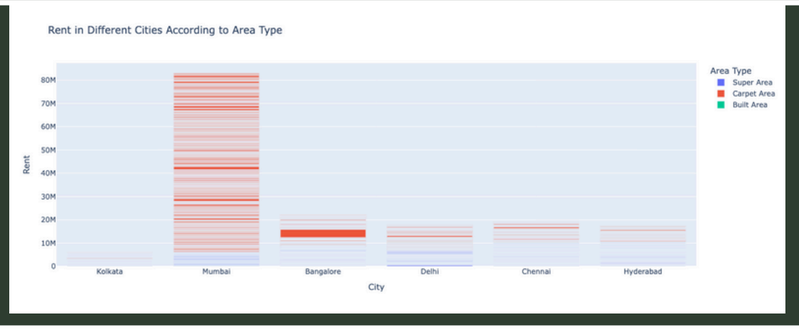
Business Context

- Problem Statement:
  - Renters want to avoid overpriced properties.
  - Owners want competitive and fair pricing.
- Solution: Build a predictive model to assist stakeholders in making informed decisions.

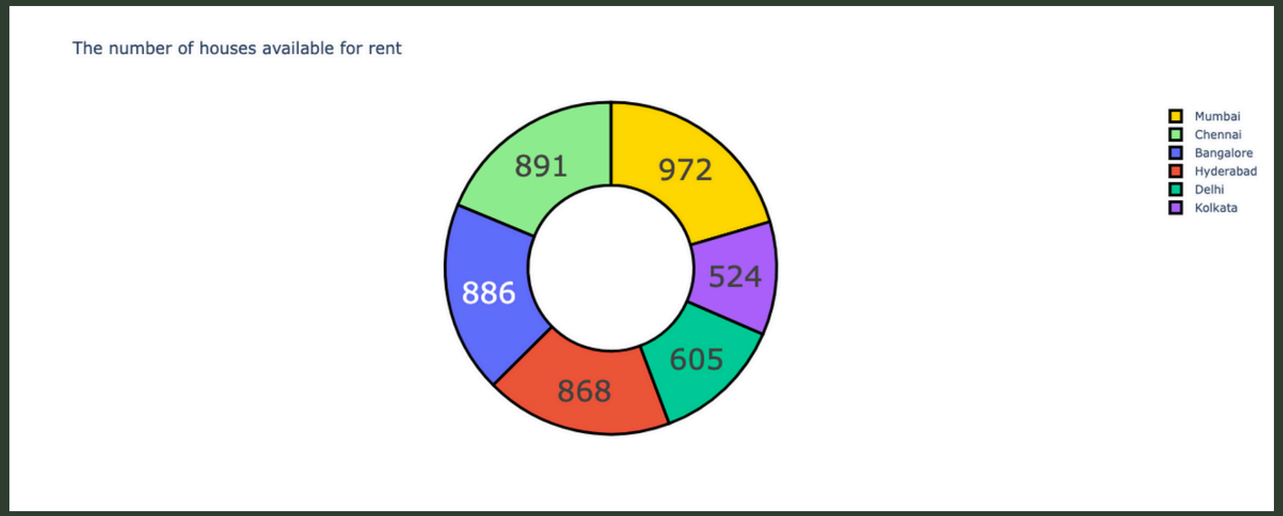
Dataset Description

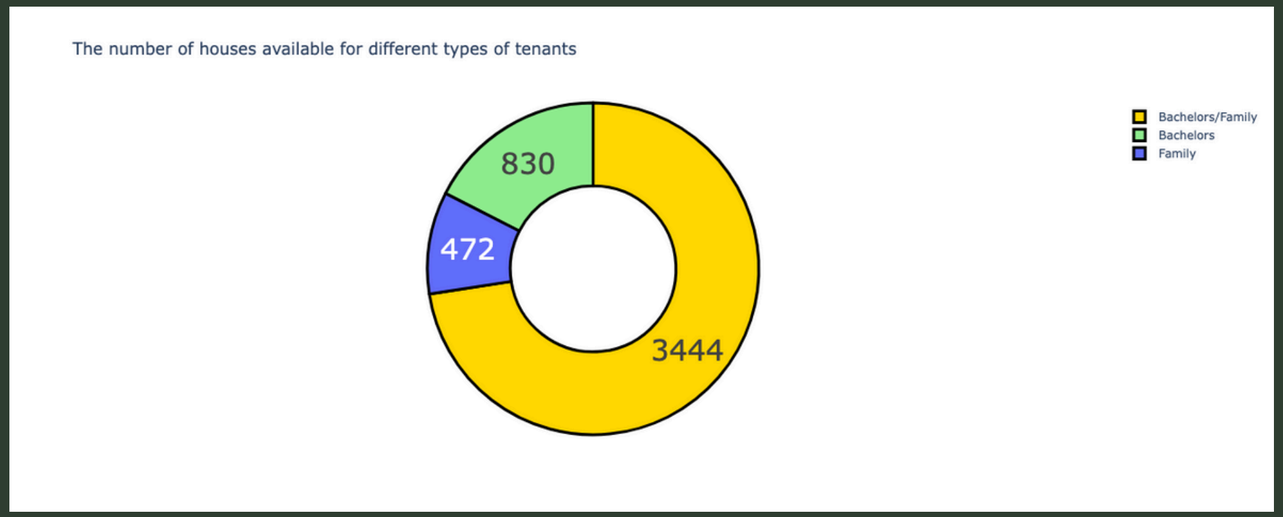
- Source: Kaggle House Rent dataset
- Features:
  - Size, BHK, Furnishing Status, City, Area Type, etc.
- Target: Rent (Monthly Rent in INR)

The rent of a housing property depends on a lot of factors:

1	The rent of the houses in different cities according to **the number of bedrooms, halls, and kitchens**	
2	The rent of the houses in different cities according to **the size** of the house	
3	The rent of the houses in different cities according to **the furnishing status** of the house	
4	The rent of the houses in different cities according to **the area type**	

The number of houses available for rent:





RESULT

Train Model (The use of an LSTM neural network model)

Model: "sequential"

Layer (type)	Output Shape	Param #
lstm (LSTM)	(None, 7, 128)	66,560
lstm_1 (LSTM)	(None, 64)	49,408
dense (Dense)	(None, 25)	1,625
dense_1 (Dense)	(None, 1)	26

Total params: 117,619 (459.45 KB)
Trainable params: 117,619 (459.45 KB)
Non-trainable params: 0 (0.00 B)

Conclusion

Total Parameters: 117,619

Trainable: All of them are trainable → means the model is fully learnable, no frozen layers.

Result

```
Enter House Details to Predict Rent
Number of BHK: 3
Size of the House: 1100
Area Type (Super Area = 1, Carpet Area = 2, Built Area = 3): 2
Pin Code of the City: 1100
Furnishing Status of the House (Unfurnished = 0, Semi-Furnished = 1, Furnished = 2): 1
Tenant Type (Bachelors = 1, Bachelors/Family = 2, Only Family = 3): 3
Number of bathrooms: 2
1/1 ━━━━━━━━━━━━━━━━━━━━ 0s 48ms/step
Predicted House Price =  [[39951.52]]
```

CONCLUSION

Key Takeaways

- Successfully built a deep learning model (LSTM) to predict house rent prices using real-world features
- Model learns from temporal and contextual patterns in the data, providing robust predictions

Insights

- Rental properties fall in the $1200 – $3,500,000 range

→ Focused model performance and evaluation within this price band

- Location, BHK, and furnishing status are top influencers of rent price

Model Summary

- Architecture: 2 LSTM layers + 2 Dense layers
- Total Trainable Parameters: 117,619
- Output: Single predicted rent value ($) per input house feature set

Final Thoughts

- The model provides a real-time rent estimation tool with good accuracy
- Can be deployed in rental platforms, property apps, or pricing tools

Future improvements

→ Incorporate location embedding, inflation adjustment, or neighborhood trends

Thank you for watching!

Full implementation available on GitHub

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GitHub

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Portfolio