ChatGPT Review

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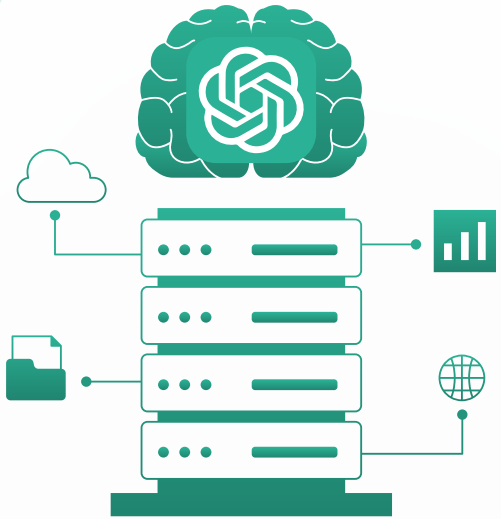
Introduction

The datasets contain daily-updated user reviews and ratings for ChatGPT app in the past two years. The goal is to find out how the thumbs-up and sentence positivity level will affect the rating scores and the amount of users using the app.



Background and Motivation

Problem

Finding the best ML model for ChatGPT app rating scores predictions

Data

Predict the impact of thumbs up and sentence positivity level on rating scores

Method

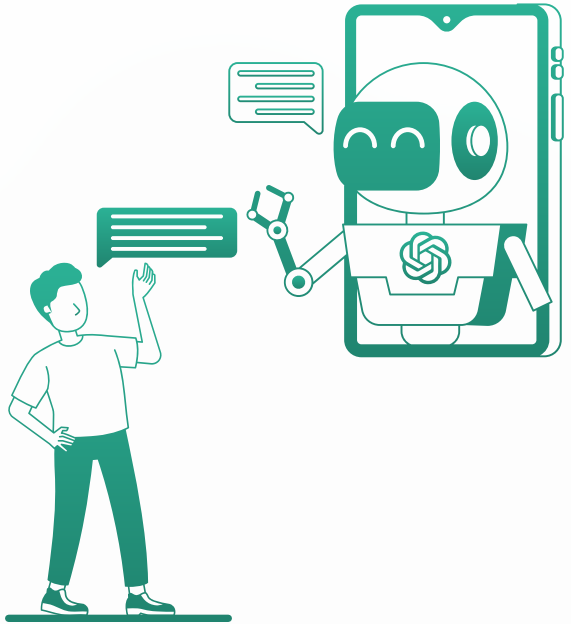
ML Model using linear regression, ridge, lasso, decision tree and random forest

Our Hypothesis

- If there is a correlation between the rating score, thumbs up count, and positive vs negative post.
- We expect the greater the number of thumbs Up, the higher the rating score.
- Positive post will receive a higher rating score than a neutral and negative post.

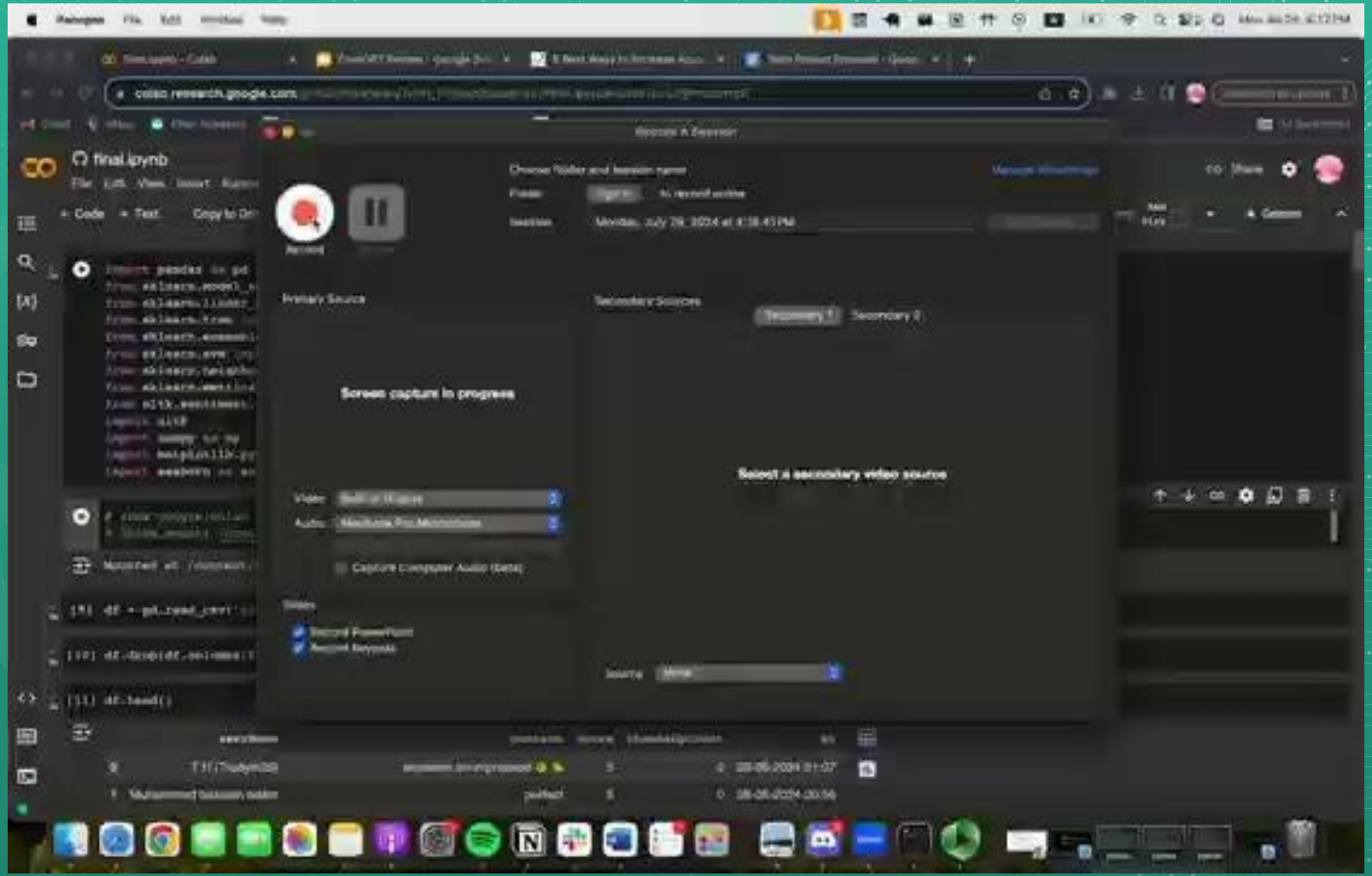
Variable

Named	Data Type	Remarks
UserName	Categorical, Nominal	The display name of the user who posted the review
Content	Categorical, Nominal	The text content of the review.
Score	Numerical, Ordinal	The rating given by the user, typically ranging from 1 to 5
thumbsUpCount	Numerical, Continuous	The number of thumbs up (likes) the review received.
At	Numerical, Continuous	The date and time when the review was posted

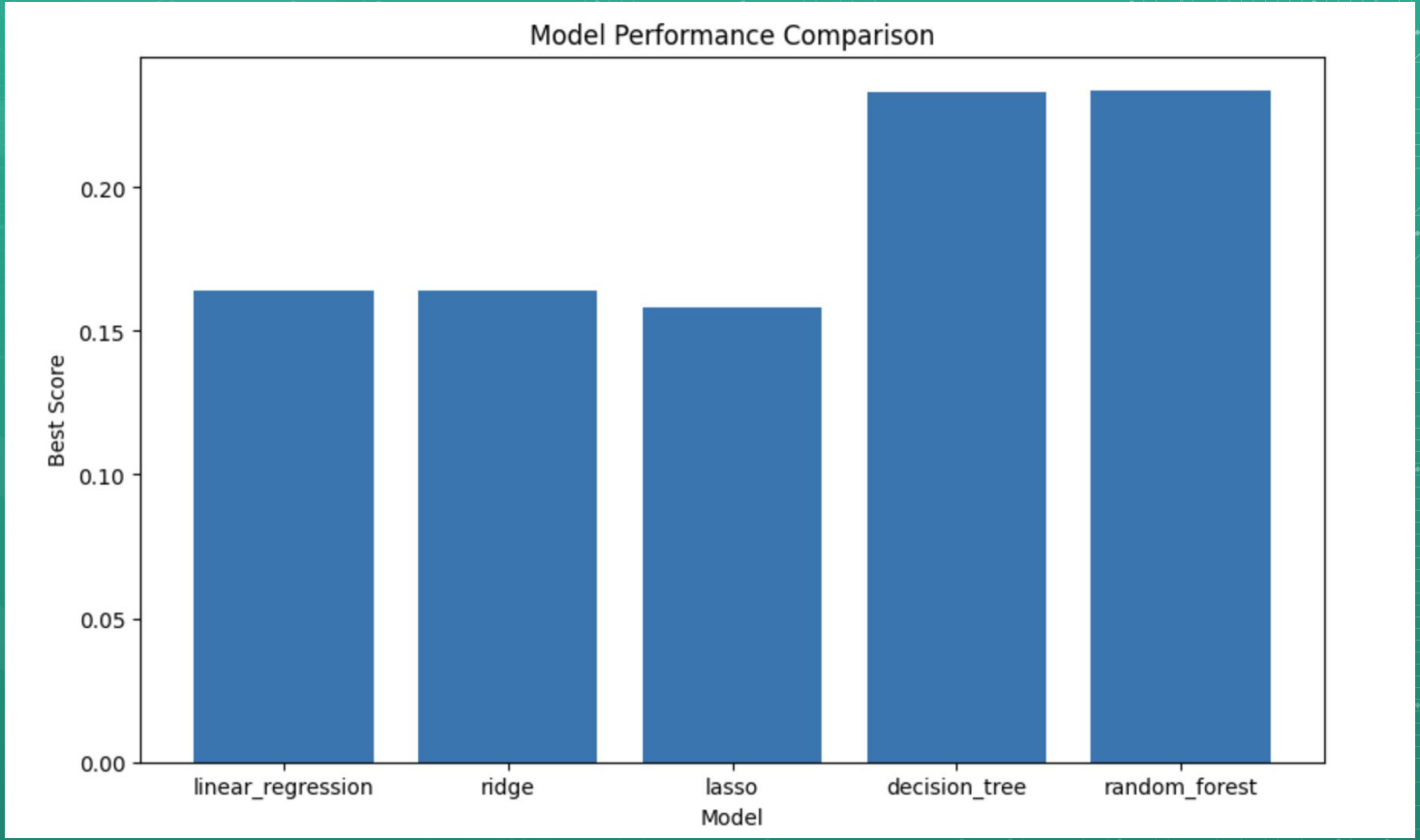


Data Preparation

- Remove any irrelevant & NA values
- Remove languages other than English
- Eliminate duplicate values
- Check for inconsistent formatting for dates, text, etc
- Sample only 2000 from the data
- Analyse pattern in data
    - Numerically and visually
- Convert categorical data types into numerical ones (SentimentIntensityAnalyzer)

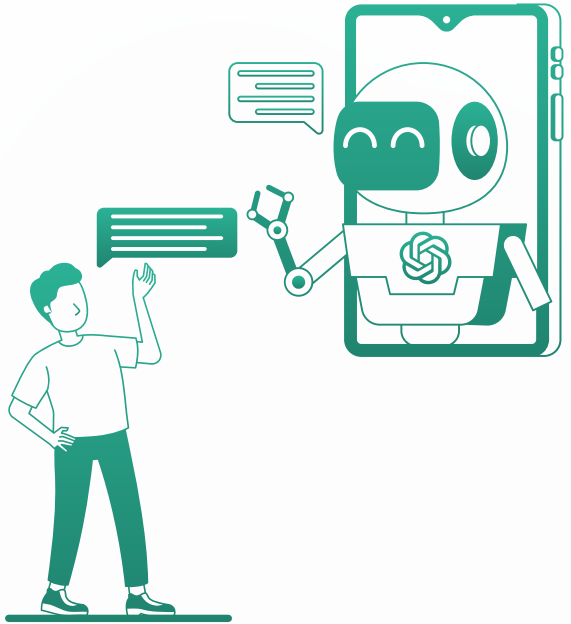

colab.research.google.com
Become A Session
final.ipynb
Record
Primary Source
Secondary Sources
Screen capture in progress
Select a secondary video source
Capture Computer Audio (beta)

Model Performance Comparison



Regression Model Comparison

	Model	Best Estimator	Best Parameters	Best Score
0	linear_regression	LinearRegression()	{'fit_intercept': True}	0.184594
1	ridge	Ridge(alpha=10.0, solver='lsqr')	{'alpha': 10.0, 'fit_intercept': True, 'solver...	0.184602
2	lasso	Lasso(alpha=0.1)	{'alpha': 0.1, 'fit_intercept': True, 'selecti...	0.178714
3	decision_tree	DecisionTreeRegressor(max_depth=15, min_sample...	{'criterion': 'squared_error', 'max_depth': 15...	0.225712
4	random_forest	(DecisionTreeRegressor(max_depth=15, max_featu...	{'max_depth': 15, 'min_samples_leaf': 4, 'min_...	0.2298



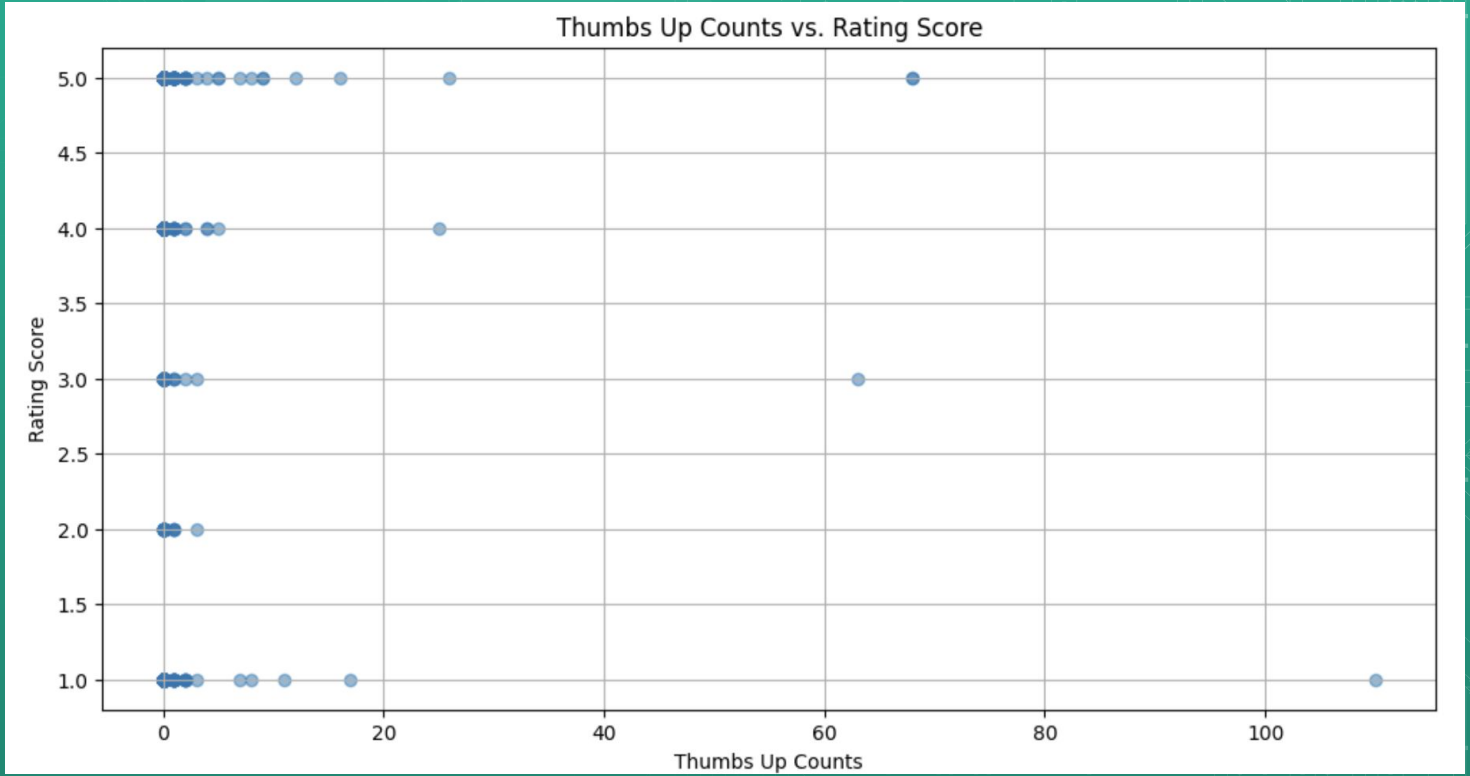
Selecting the Right Model

- GridSearchCV
- Regression Model: Random Forest

Training the Model

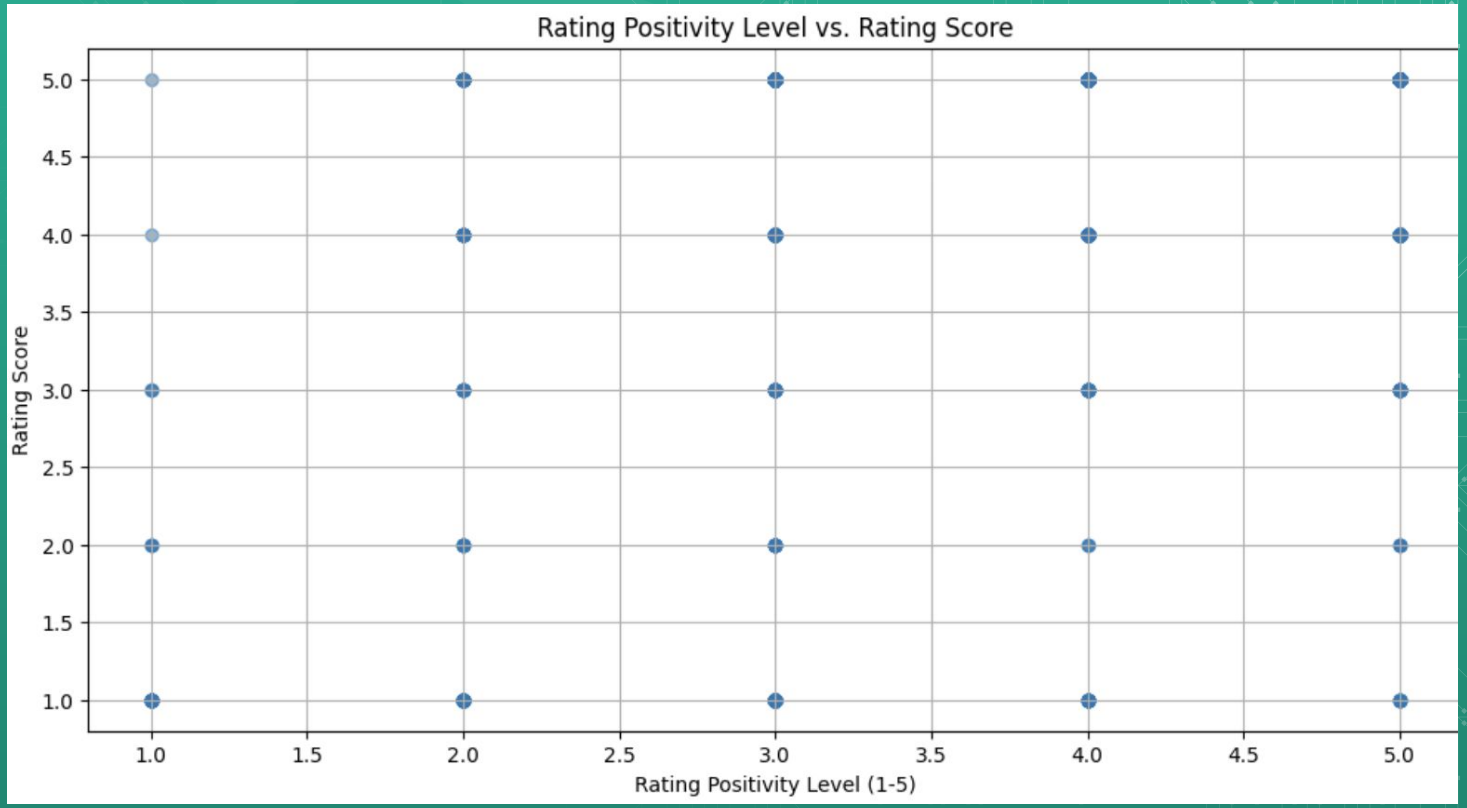
- 80% training data - 1600 samples
- 20% testing data - 400 samples

Finding and Results



Higher rating scores are more likely to receive a higher number of thumbs ups but the relationship is not significant.

Finding and Results



No relationship between a positive vs negative post and their rating score

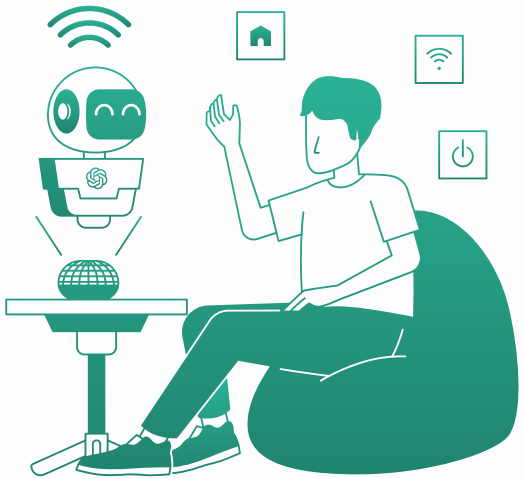
Model Prediction (rating score)

Thumbs Up Count	Content Score	Actual Rating Score	Predicted Rating Score
0	4	5	✅4.644 ~ 5
0	3	5	✅4.784 ~ 5
7	1	4	❌3.217 ~ 3
5	5	5	✅4.845 ~ 5

Results and Conclusion

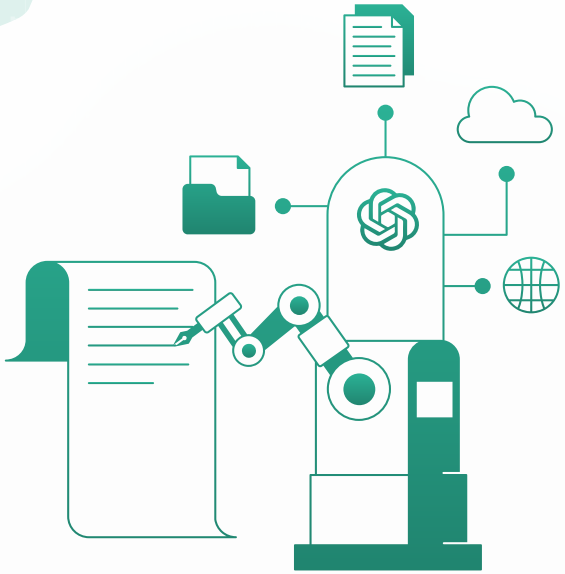
- Mean Squared Error: 1.22372
- Mean Absolute Error: 0.78584
- R-squared: 0.20696

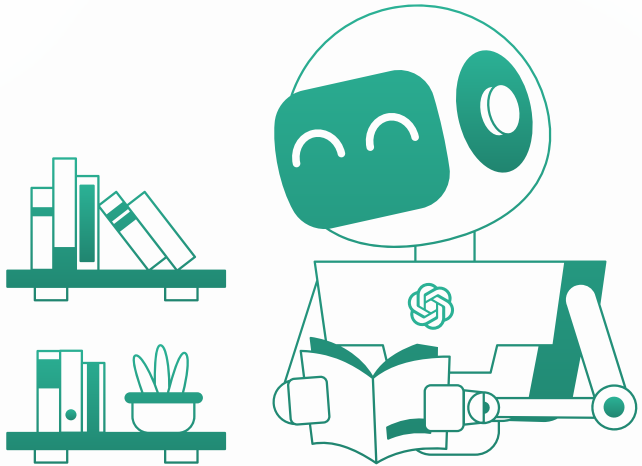
- The positivity level of the post has a slight impact on the rating score but not much to say it is an important factor
- The number of thumbs ups of the post has no relation to the rating score



Error Analysis and Scope for Improvement

- Our final model is a random forest model that has an accuracy of 0.35 on average.
- The model accuracy is not as good as expected, but we simply want to analyse the pattern and predict the rating scores. The result may not be a strong indicator for ChatGPT peer reviews.
- To improve our model, we might need to scale the features, and use more ensemble methods such as k-fold cross validation, L1 and L2 regularization, etc.





References and Documentation

- Kaggle
- Sentiment Analysis
- Scikit Learn API
- Improving Model Accuracy

Thank You!