

# ANALISIS SENTIMEN ULASAN FILM IMDB MENGUNAKAN MODEL GRANITE 3.2 8B VIA REPLICATE API



**dhanielbenywardhanaa\_**



# Introduction

IMDB adalah salah satu basis data film terbesar di dunia yang memuat jutaan ulasan dari penonton. Ulasan-ulasan ini mengandung informasi berharga mengenai pendapat publik terhadap film, mulai dari kualitas cerita, akting, hingga sinematografi.

Namun, sebagian besar ulasan masih berbentuk teks mentah yang tidak dianalisis secara otomatis. Hal ini membuat sulit untuk mengolah data dalam skala besar dan mengidentifikasi tren opini dengan cepat. Analisis sentimen menjadi solusi untuk mengelompokkan ulasan berdasarkan nada emosinya, seperti positif, negatif, atau campuran, sehingga mempermudah studio film, kritikus, dan peneliti dalam memahami reaksi audiens.

Perkembangan teknologi Large Language Model (LLM), seperti Granite 3.2 8B, memungkinkan analisis sentimen dilakukan dengan presisi lebih tinggi. Model ini tidak hanya mengklasifikasikan sentimen, tetapi juga memberikan penjelasan (explanation) atas prediksi yang dibuat, sehingga hasil analisis menjadi lebih transparan dan dapat dipertanggungjawabkan.



# Tujuan Project

1. Mengklasifikasikan Ulasan IMDB Menggunakan model Granite 3.2 8B untuk mengelompokkan ulasan film menjadi tiga kategori utama: Positive, Negative, atau Mixed.
2. Memberikan Penjelasan (Explanation) pada Prediksi Setiap hasil klasifikasi disertai dengan alasan atau analisis singkat mengapa model mengambil keputusan tersebut, sehingga pengguna dapat memahami konteks dan logika model.
3. Mengukur Kinerja Model & Kualitas Penjelasan Evaluasi dilakukan dengan metrik seperti Accuracy, Precision, Recall, dan F1-Score untuk mengukur performa prediksi. Selain itu, kualitas penjelasan dinilai berdasarkan Relevance (kesesuaian dengan isi ulasan) dan Clarity (kejelasan penjelasan).





# Data Sheet

01.

Data yang di ambil dari Keagle : IMDB Movie Reviews Dataset (50.000 ulasan film).



02.

Format: File CSV dengan dua kolom utama:

- 1.review – teks ulasan film.
- 2.sentiment – label sentimen (Positive atau Negative).

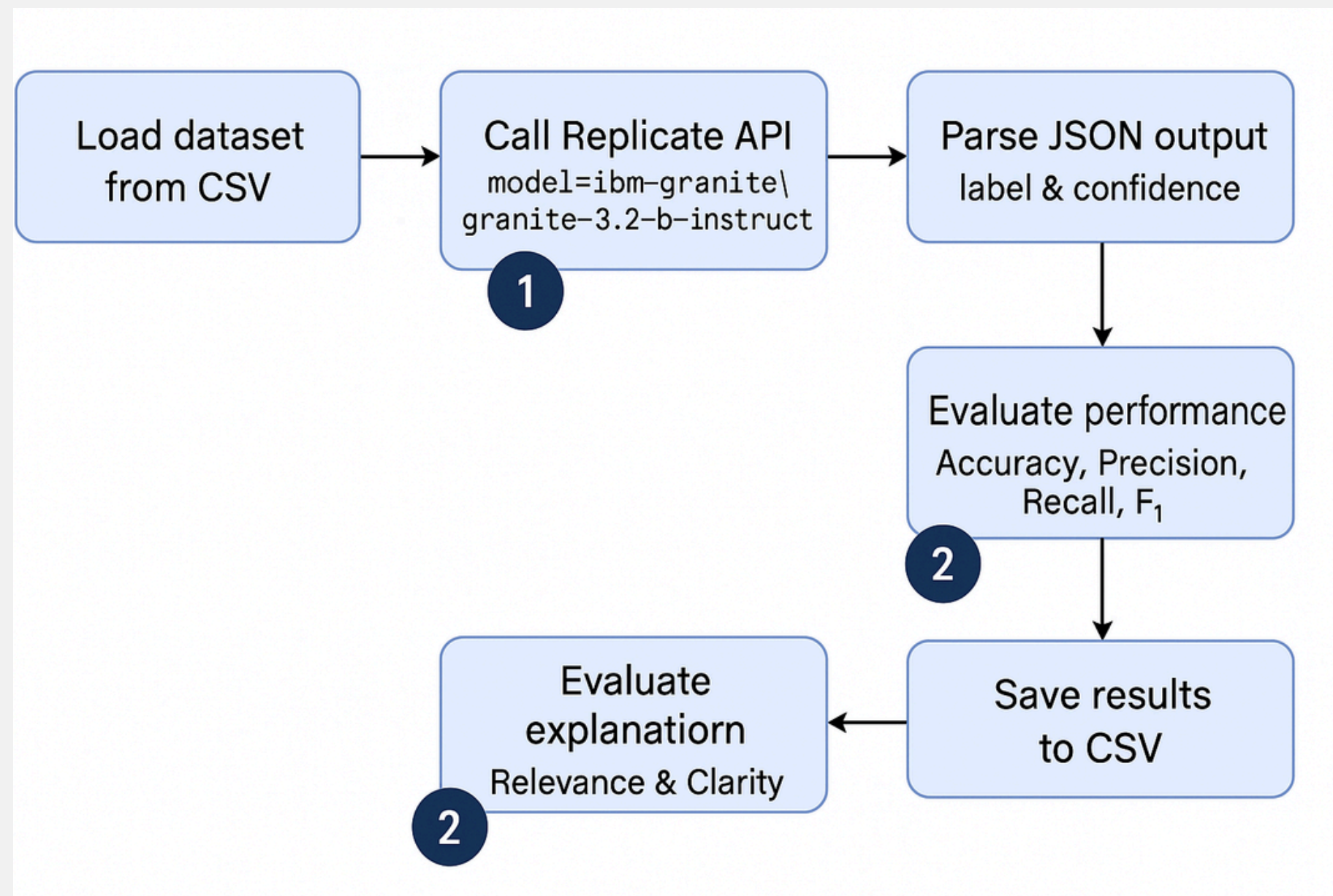
03.

Sampling: Diambil 300 data secara acak untuk menghemat penggunaan token API saat pengujian.



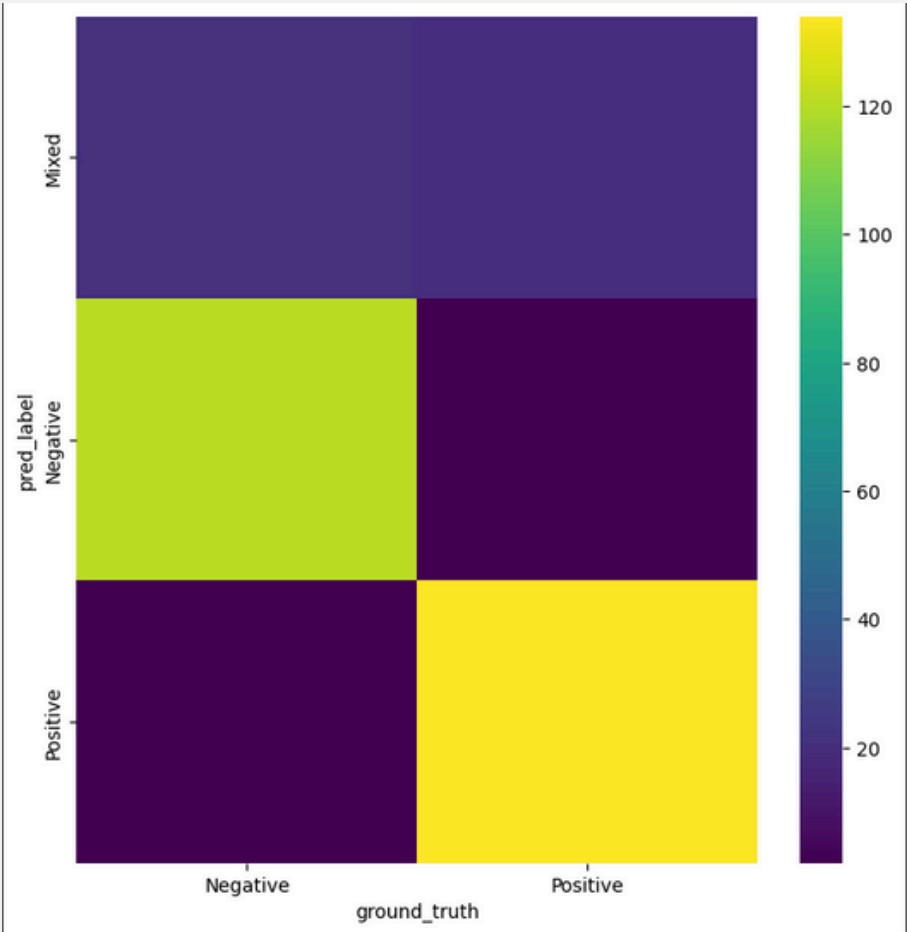


# Arsitektur Sistem

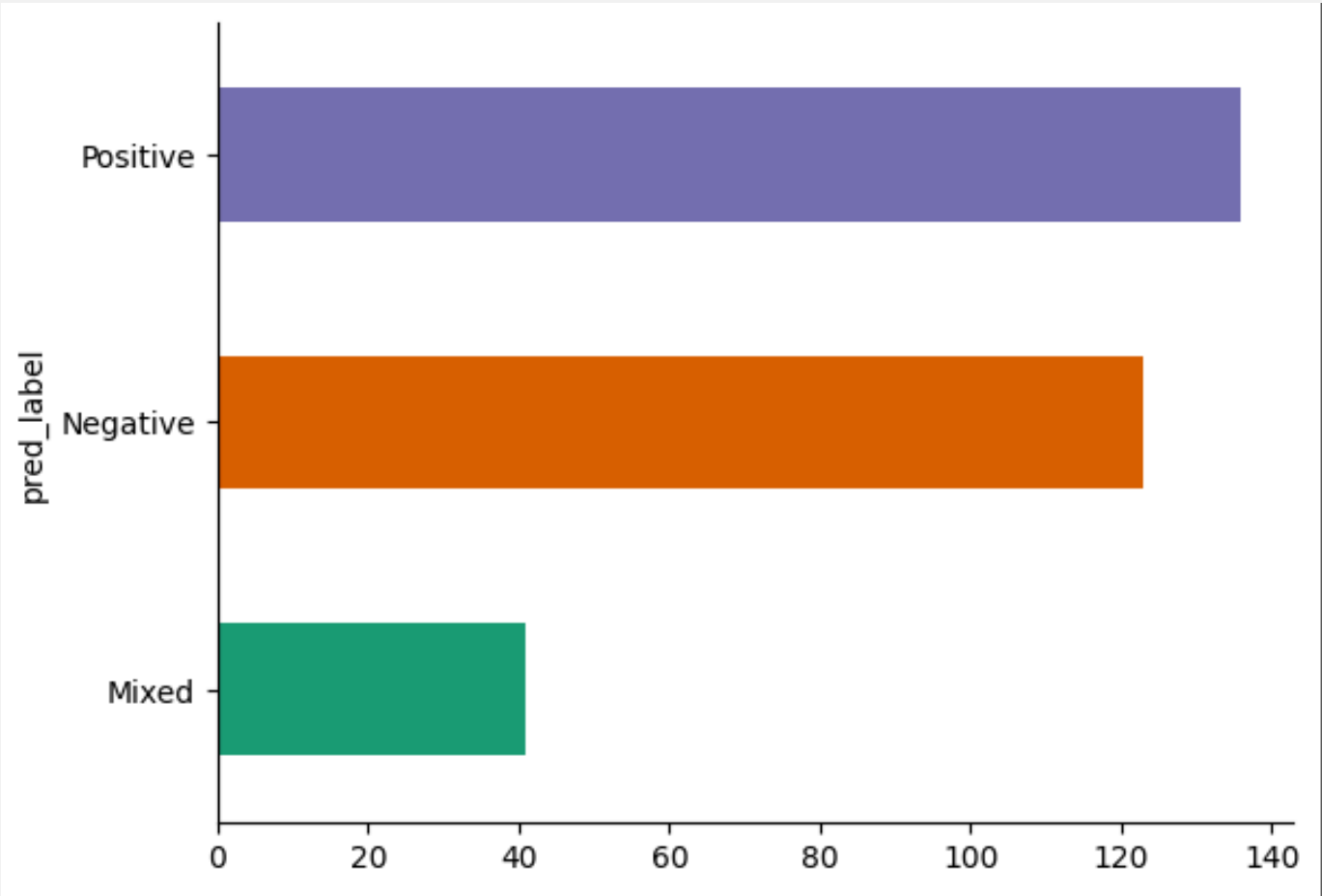


# Ringkasan Hasil Klasifikasi Sentimen Model Granite

	idx	review	ground_truth	pred_label	confidence	explanation
0	0	I really liked this Summerslam due to the look...	Positive	Mixed	0.85	The review expresses both positive and negativ...
1	1	Not many television shows appeal to quite as m...	Positive	Positive	0.95	The review expresses strong admiration for Far...
2	2	The film quickly gets to a major chase scene w...	Negative	Mixed	0.85	The review expresses both positive and negativ...
3	3	Jane Austen would definitely approve of this o...	Positive	Positive	1.00	The review expresses strong praise for the fil...
4	4	Expectations were somewhat high for me when I ...	Negative	Negative	0.95	The review expresses strong criticism towards ...



ground\_truth vs pred\_label



pred\_label

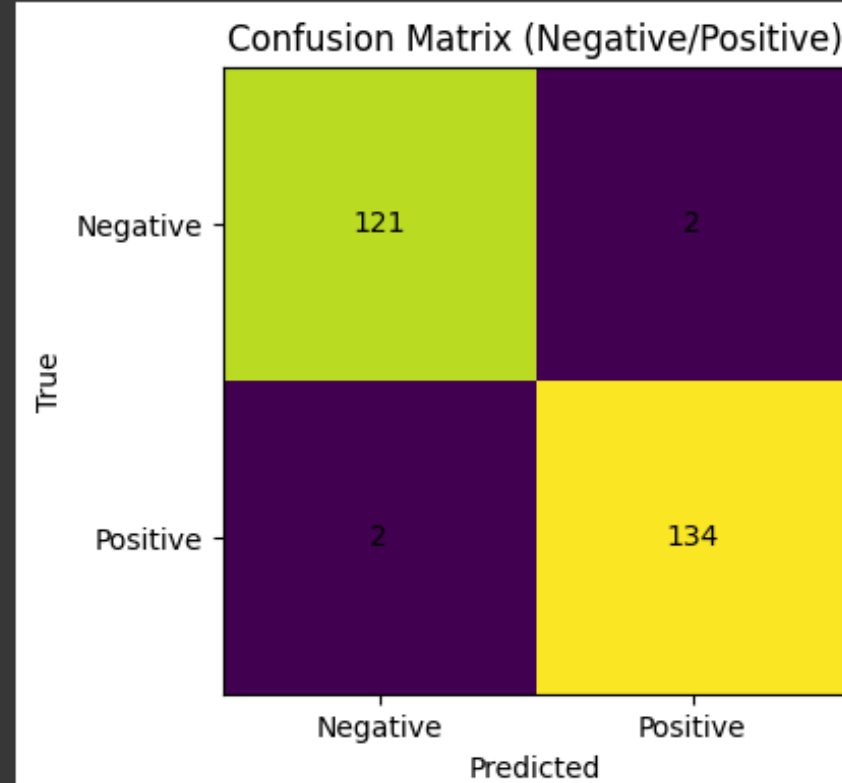


# Evaluasi Kinerja

```
==[CLASSIFICATION METRICS]==  
Accuracy : 0.8500  
Macro P  : 0.9845  
Macro R  : 0.8496  
Macro F1 : 0.9121
```

```
==[CLASSIFICATION REPORT]==  
              precision    recall  f1-score   support  
  
   Mixed       0.0000       0.0000       0.0000         0  
   Negative    0.9837       0.8403       0.9064        144  
   Positive    0.9853       0.8590       0.9178        156  
  
   accuracy                0.8500        300  
   macro avg       0.6563       0.5664       0.6081        300  
   weighted avg    0.9845       0.8500       0.9123        300
```

```
/usr/local/lib/python3.11/dist-packages/sklearn/metrics/_classification.py:1565: UndefinedMetricWarning: Recall is ill-defined  
_warn_prf(average, modifier, f"{metric.capitalize()} is", len(result))  
/usr/local/lib/python3.11/dist-packages/sklearn/metrics/_classification.py:1565: UndefinedMetricWarning: Recall is ill-defined  
_warn_prf(average, modifier, f"{metric.capitalize()} is", len(result))  
/usr/local/lib/python3.11/dist-packages/sklearn/metrics/_classification.py:1565: UndefinedMetricWarning: Recall is ill-defined  
_warn_prf(average, modifier, f"{metric.capitalize()} is", len(result))
```



# Quality Metrics for Model Explanations

## Relevance & Clarity

```

/usr/local/lib/python3.11/dist-packages/huggingface_hub/utils/_auth.py:94: UserWarning:
The secret `HF_TOKEN` does not exist in your Colab secrets.
To authenticate with the Hugging Face Hub, create a token in your settings tab (https://huggingface.co/settings/tokens), set it as secret in your Google Colab and restart your session.
You will be able to reuse this secret in all of your notebooks.
Please note that authentication is recommended but still optional to access public models or datasets.
warnings.warn(
modules.json: 100% ██████████ 349/349 [00:00<00:00, 16.6kB/s]

config_sentence_transformers.json: 100% ██████████ 116/116 [00:00<00:00, 7.00kB/s]

README.md: █ 10.5k/? [00:00<00:00, 876kB/s]

sentence_bert_config.json: 100% ██████████ 53.0/53.0 [00:00<00:00, 4.76kB/s]

config.json: 100% ██████████ 612/612 [00:00<00:00, 39.9kB/s]

model.safetensors: 100% ██████████ 90.9M/90.9M [00:01<00:00, 61.3MB/s]

tokenizer_config.json: 100% ██████████ 350/350 [00:00<00:00, 16.1kB/s]

vocab.txt: █ 232k/? [00:00<00:00, 8.91MB/s]

tokenizer.json: █ 466k/? [00:00<00:00, 14.3MB/s]

special_tokens_map.json: 100% ██████████ 112/112 [00:00<00:00, 7.59kB/s]

config.json: 100% ██████████ 190/190 [00:00<00:00, 9.19kB/s]

==[QUALITY METRICS]==
Avg Relevance: 0.5279
Avg Clarity : 0.4607

```



# Final Summary & Export Results

```
==[PROJECT SUMMARY]==
```

```
{  
  "model": "ibm-granite/granite-3.2-8b-instruct",  
  "n_samples": 300,  
  "accuracy": 0.85,  
  "macro_precision": 0.9845169775227165,  
  "macro_recall": 0.8496260683760684,  
  "macro_f1": 0.9120876301882921,  
  "avg_relevance": 0.5278750361471126,  
  "avg_clarity": 0.4607278303044684  
}
```

```
Hasil rinci disimpan ke: ./imdb_granite_results_full.csv
```

# Hasil Prediksi Model

	review	ground_truth	pred_label	confidence	explanation	relevance	clarity
254	The Thumb idea isn't such a winner the second ...	Negative	Mixed	0.95	The review presents a mix of positive and nega...	0.718176	0.410253
57	A remake of the 1916 silent film, based on the...	Positive	Positive	0.85	The review expresses admiration for the film, ...	0.369919	0.569395
150	This movie is well made, it is beautiful and w...	Positive	Positive	1.00	The review expresses overwhelming praise for t...	0.631426	0.555570
66	There's a part of me that would like to give t...	Negative	Mixed	0.95	The review presents a mix of positive and nega...	0.655756	0.350955
114	I actually saw this movie in the theater back ...	Negative	Negative	0.95	The review expresses strong criticism of the m...	0.621686	0.547166



# Thank you very much!

Dhanial Beny Wardhana