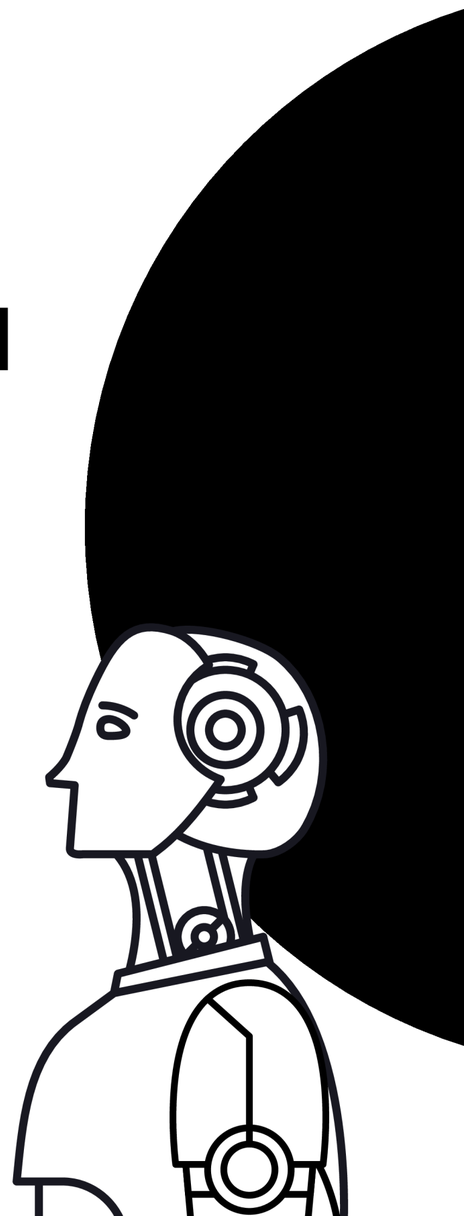
EMOTION-BASED POEM GENERATION PROJECT

EXTENDED TECHNICAL OVERVIEW & GRADING COMPONENTS



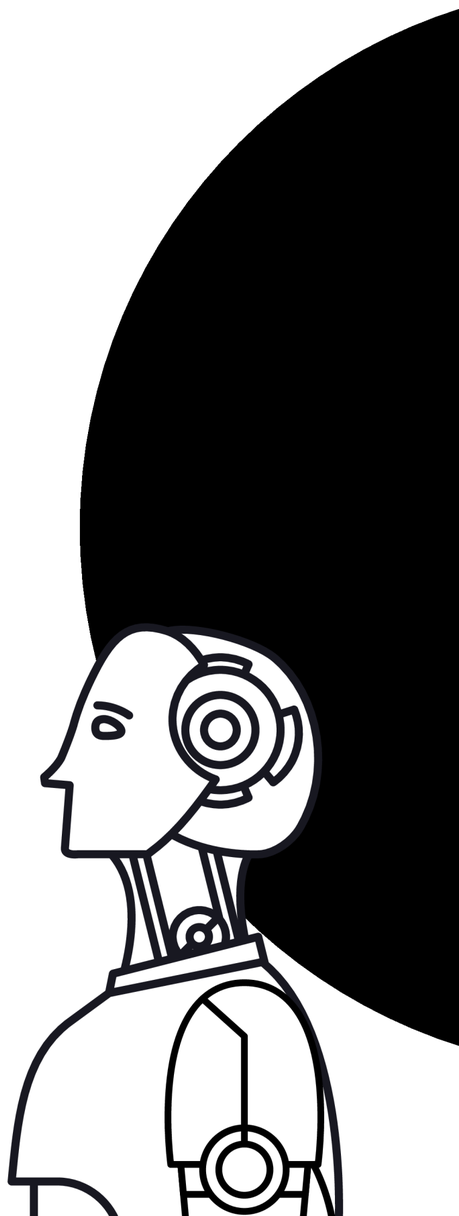
PROJECT OVERVIEW:

1. AIM: BUILD AN AI SYSTEM THAT GENERATES POEMS BASED ON USER EMOTIONS.

2. APPROACH: COMBINE DATASET-BASED SIMILARITY EXTRACTION + GPT-2 GENERATION.

3. USES NLP, EMBEDDINGS, COSINE SIMILARITY, AND GENERATIVE MODELLING.

4. OUTPUT: EMOTION-ALIGNED, MEANINGFUL, CONTEXT-INSPIRED POEM.



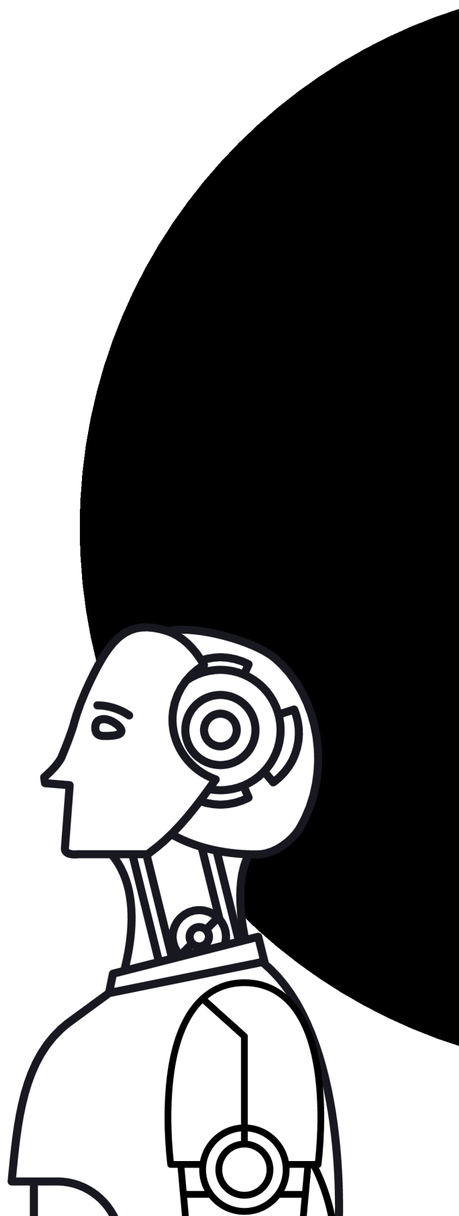
DATASET DESCRIPTION:

1. ABIEMO_2334.CSV:
CONTAINS EMOTION LABELS + POEM TEXTS.

2. BAPEMO_6346.CSV:
ADDITIONAL POEMS WITH SIMILAR STRUCTURE.

3.COMBINED DATASET SIZE:
200 SAMPLES USED FOR EXPERIMENT.

4.PREPROCESSING:
CLEANING POEMS, STANDARDIZING EMOTION LABELS.



PREPROCESSING PIPELINE:

1. REMOVAL OF HTML TAGS

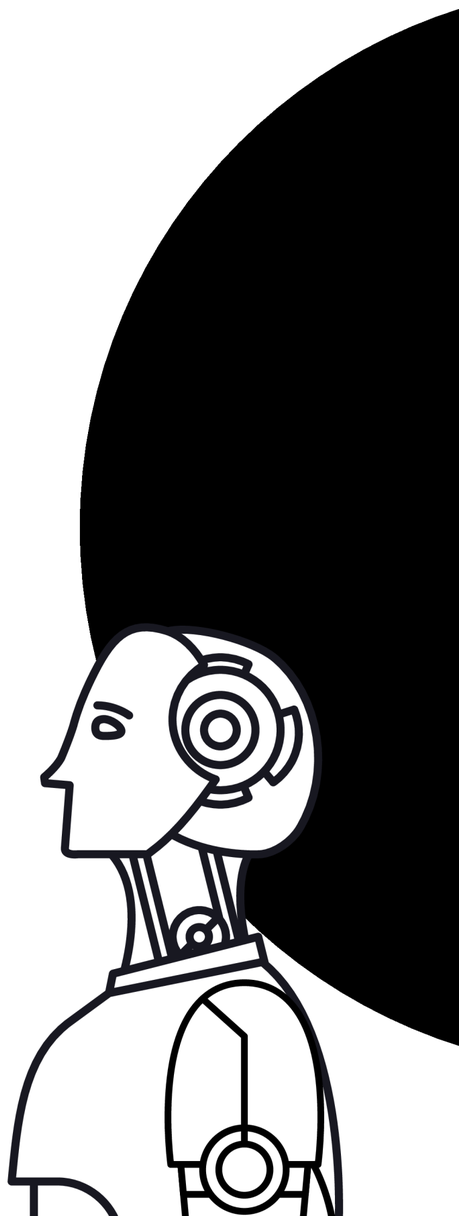
2. LOWERCASING TEXT.

3. REMOVING PUNCTUATION.

4. REDUCING REPEATED SPACES.

5. STANDARDIZING DATASET LABELS.

6. STORING CLEAN POEMS FOR EMBEDDING

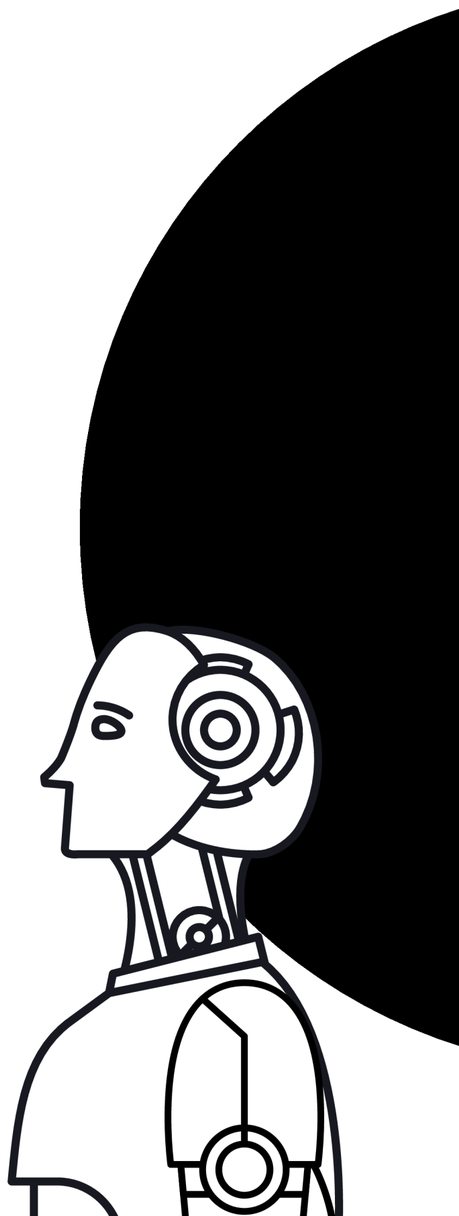


EMBEDDING ARCHITECTURE :

- MODEL: DISTILROBERTA-BASE (TRANSFORMER ENCODER).

- EMBEDDING DIM: 768.

- PROCEDURE:
  - TOKENIZE EMOTION/POEM
  - GENERATE HIDDEN STATES
  - USE [CLS] TOKEN REPRESENTATION
- STORED AS EMOTION_EMB AND POEM_EMB.



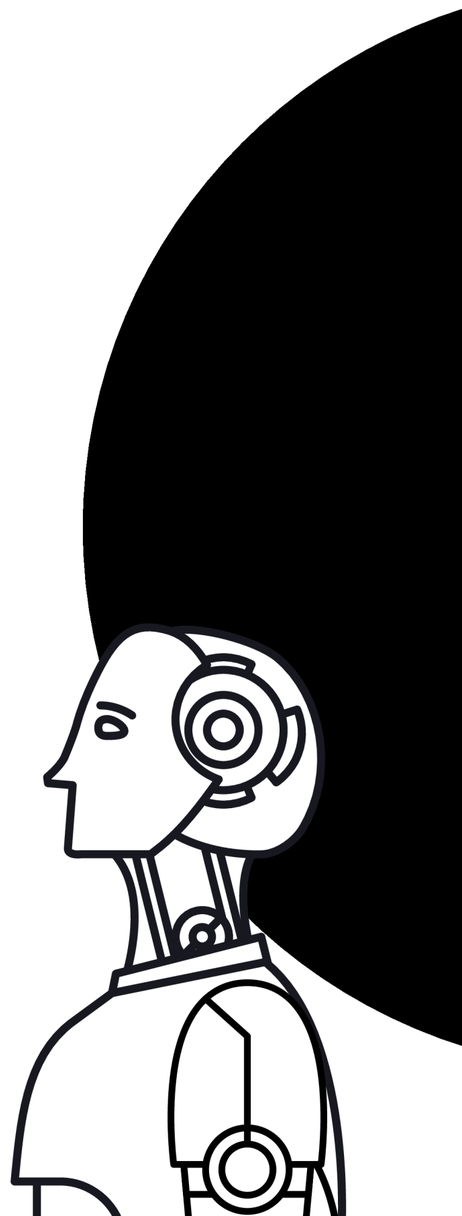
EMOTION MATCHING LOGIC:

- GIVEN AN EMOTION, CREATE EMBEDDING WITH DISTILROBERTA.

- COMPARE WITH STORED EMOTION EMBEDDINGS USING COSINE SIMILARITY.

- RETRIEVE POEM WITH HIGHEST SIMILARITY SCORE.

- THIS CREATES CONTEXT-BASED INSPIRATION FOR GPT-



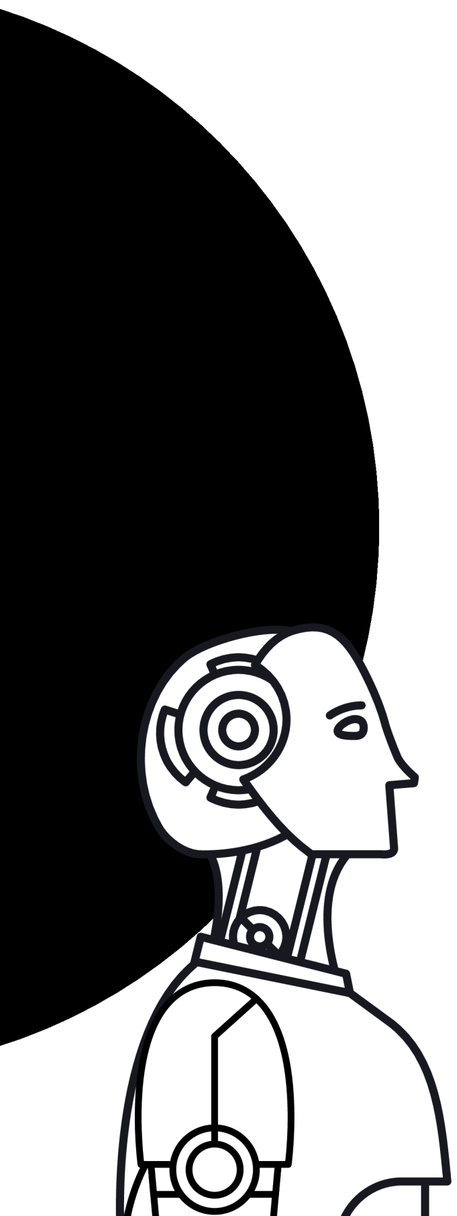
GPT-2 GENERATION PIPELINE :

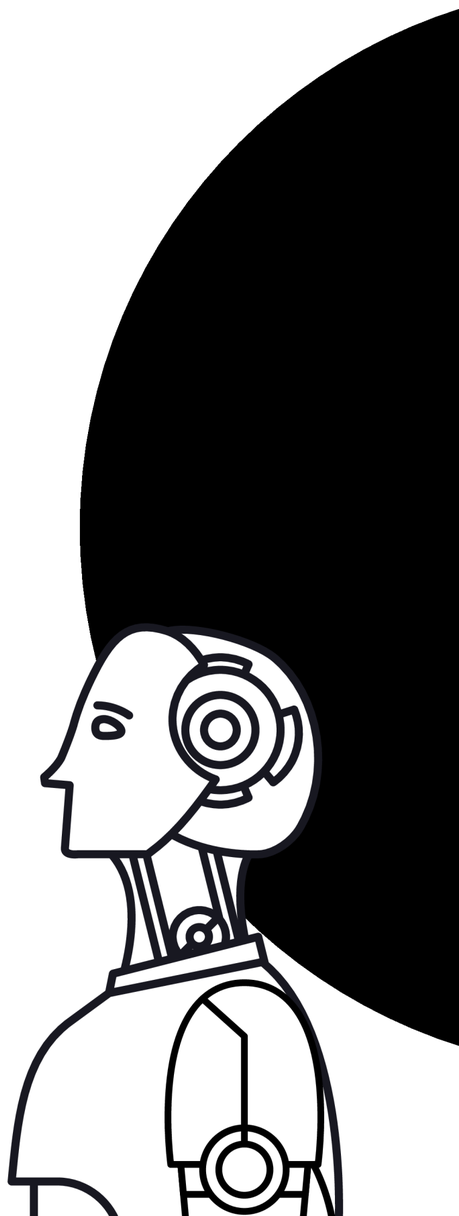
- PRETRAINED GPT-2 MODEL USED.

- PROMPT = EMOTION + MOST SIMILAR POEM.

- SAMPLING METHOD:
- - MAX_NEW_TOKENS=60
- - TEMPERATURE=0.8
- - TOP_P=0.95

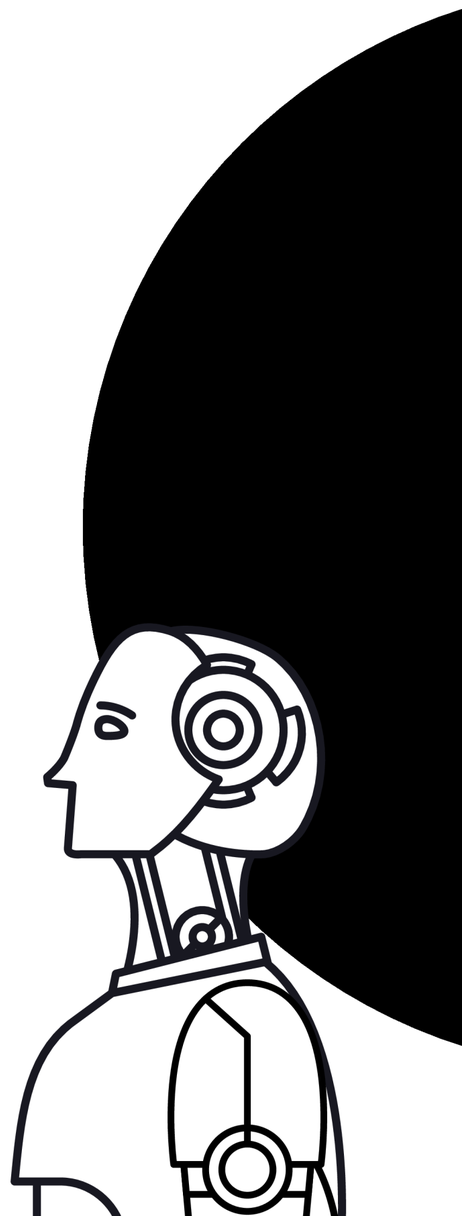
- PRODUCES CREATIVE POEM WHILE MAINTAINING EMOTION TONE.





EXAMPLE: JOY EMOTION OUTPUT:

- EMOTION: JOY
- SYSTEM RETRIEVES CLOSEST POEM RELATED TO 'JOY'.
- GPT-2 GENERATES A NEW POEM WITH EMOTIONAL COHERENCE.
- EXAMPLE OUTPUT SHOWN IN PROJECT NOTEBOOK.



SYSTEM WORKFLOW:

1. USER ENTERS AN EMOTION.

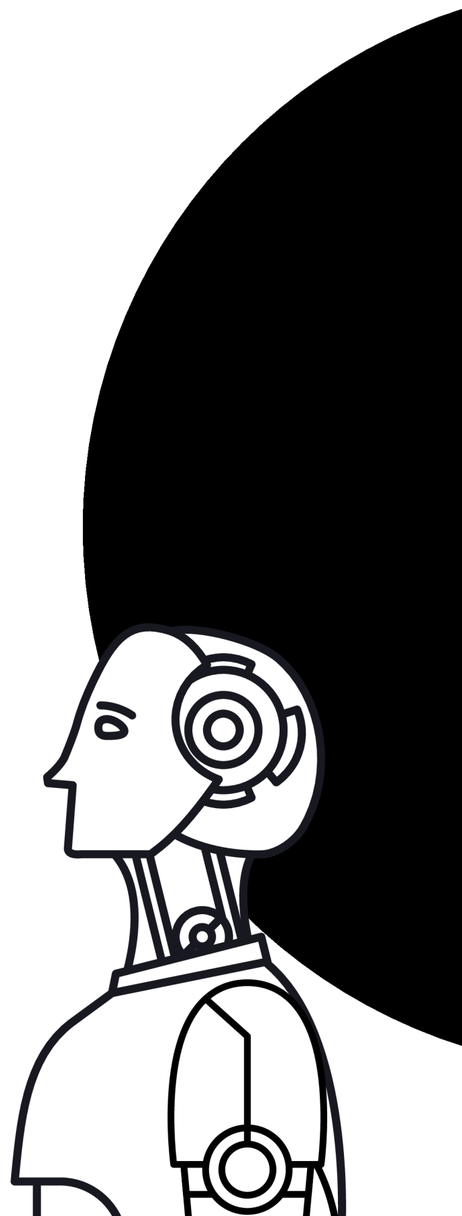
2.SYSTEM EMBEDS THE EMOTION.

3. FINDS MOST SIMILAR EMOTION IN DATASET.

4. EXTRACTS INSPIRATION POEM.

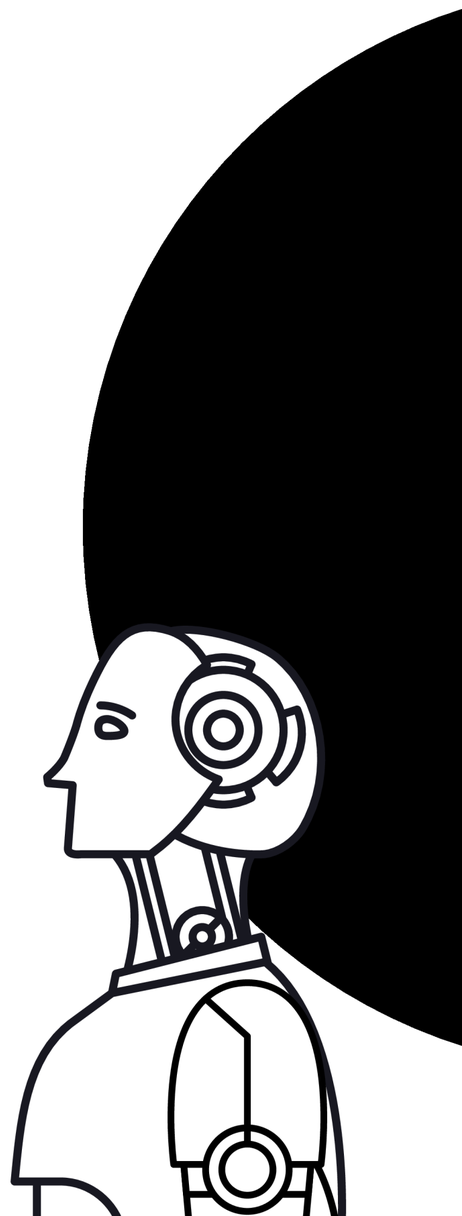
5. GPT-2 GENERATES NEW POEM.

6. OUTPUT DISPLAYED TO USER.



FUTURE ENHANCEMENTS:

- FINE-TUNE GPT-2 ON POEM DATASET.
- ADD SENTIMENT CLASSIFICATION FOR QUALITY ASSURANCE.
- USE LARGER EMOTION DATASETS.
- DEPLOY WEB APP INTERFACE.
- ADD MULTILINGUAL EMOTION-TO-POEM GENERATION.



SUMMARY:

- PROJECT INTEGRATES NLP, EMBEDDINGS, SIMILARITY SEARCH, AND GENERATIVE AI.

- DEMONSTRATES PRACTICAL AI PIPELINE.

- GRADING INVOLVES METHODOLOGY, PROBLEM DEFINITION, EXECUTION, AND RESEARCH CONTRIBUTION.

- FINAL OUTCOME: A FUNCTIONAL EMOTION-AWARE POETRY GENERATOR.