TESSA

Text Emotion System Sentiment Analysis

CSC 44800: Artificial Intelligence
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01

Introduction

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sadness Mpeg	hapiness Mpeg	disgust Mpeg
fear Mpeg	surprise Mpeg	anger Mpeg
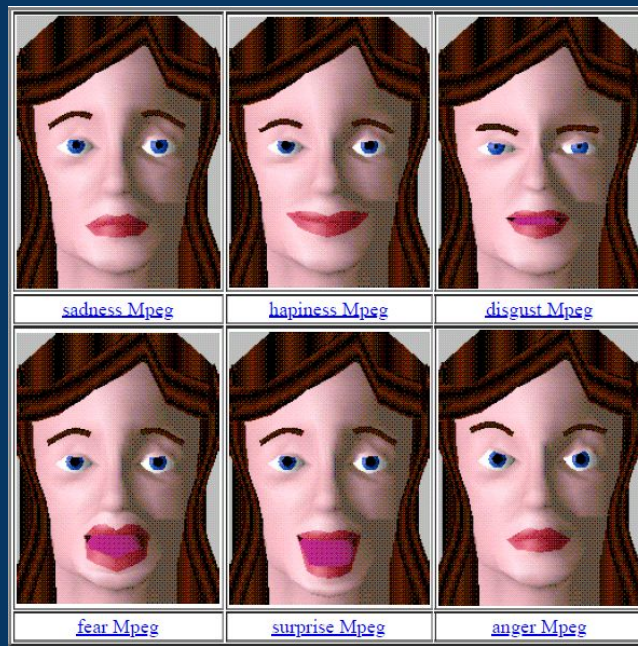
Goal

Interpreting human emotions is hard, even for us humans!

So, can we interpret human emotions on machines with reasonable accuracy?

Action

Interpret a user's human emotion from text using Machine Learning!

Interpret the six universal expressions!

02

Goal

1. **IDENTIFY USE CASES:**

- Acting
- Social Media Postings
- Text Messages
- Customer Service
- Product Feedback
- Market Research
- Interview Essay Questions
- Human-Robot Interaction

02

Goal

2.   **EXPLORE AND IMPLEMENT SOLUTIONS**

Particularly, we chose to solve the sub-problem

- **Actors practicing:** Emotion detection can be used to provide real-time feedback on an actor's performance.

USER SCENARIOS

USER SCENARIO 1

Prompts user with:
- A text input field

Classify Button:
- Take user input text
- Send input text to the model
- Return the emotion from the user input text

USER SCENARIO 2

Prompts user with:
- Emotion/Expression to convey

Record Button:
- Taking actor's voice
- Send it to a pre trained speech to text model

Classify Button:
- Take text from pretrained model
- Send that text to the model
- Return the emotion from the actor's text

- Classification Problem

- 5 emotion values (classes)

- 39,825 text documents (rows)

- Sourced posts from Twitter API

https://www.kaggle.com/datasets/pashupatigupta/emotion-detection-from-text

- Supplementary datasets to preserve class balances

https://www.kaggle.com/datasets/praveengovi/emotions-dataset-for-nlp
https://www.kaggle.com/datasets/shivamb/go-emotions-google-emotions-dataset
https://huggingface.co/datasets/dair-ai/emotion

sentiment		content	
neutral	22%		
worry	21%	39827 unique values	
Other (22903)	57%		

| sadness	Funeral ceremony...gloomy friday...
enthusiasm	wants to hang out with friends SOON!
neutral	@dannycastillo We want to trade with someone who has Houston tickets, but no one will.

04

Solution

Models to try:

1. **LSTM**
2. **MultinomialNB**
3. **SVM**
4. **Logistic Regression**
5. **Decision Tree**
6. **Random Forest**
7. **XGBoost**

Training/Testing/Validation Technique:

1. **k-fold Cross-Validation**
   - **k = 10**
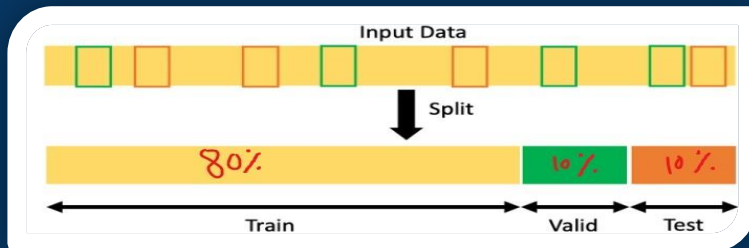
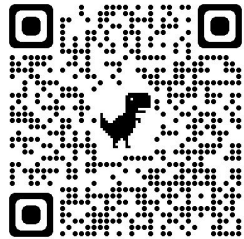# Technologies That May Be Utilized

TECHNOLOGIES

1. Tensorflow
2. Pytorch
3. Keras
4. NLTK
5. SciKit-Learn
6. Numpy
7. Pandas
8. Imbalanced-Learn
9. Plotly
10. Matplotlib
11. Seaborn
12. Jupyter Notebook
13. Python
14. Flask
15. Streamlit
16. Hugging Face
17. HTML
18. CSS
19. JavaScript
20. Git
21. GitHub

Questions & Answers

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