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 |
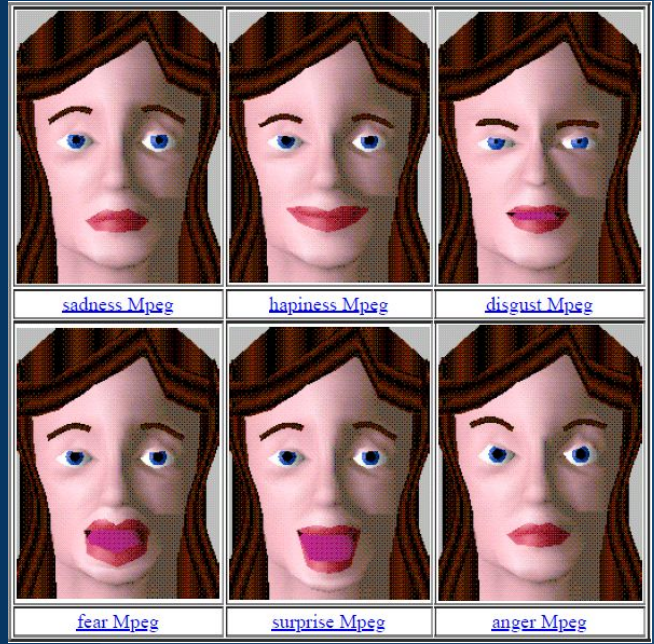
Goal

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!
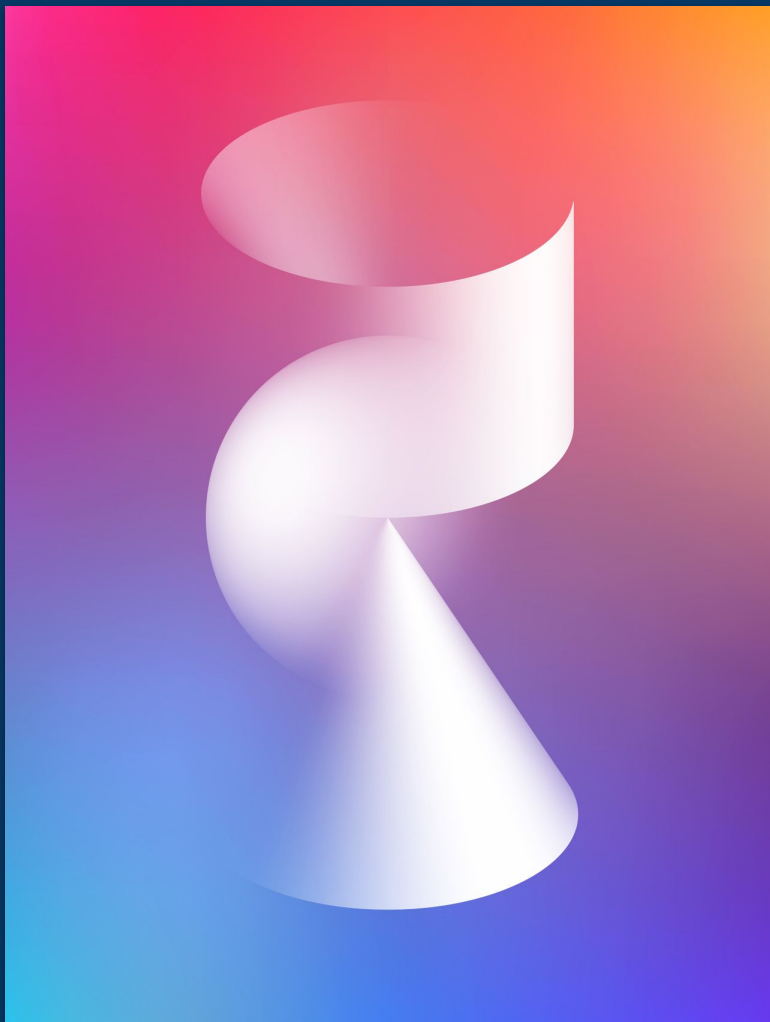
Interpret the six universal expressions!

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.

03

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

- 6 emotion values (classes)

    - Anger, Fear, Joy, Love, Sadness, Surprise

- **Training data** = 16, 000 unique text documents (rows)

- **Validation data** = 2, 000 unique text documents (rows)

- **Testing data** = 2, 000 unique text documents (rows)

- Sourced posts from Twitter API

- Main dataset : **https://www.kaggle.com/datasets/praveengovi/emotions-dataset-for-nlp**

- Supplementary dataset to preserve class balances if needed:

    - **https://huggingface.co/datasets/dair-ai/emotion/viewer/unsplit**

04

Solution

Models to try:

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

Training/Testing/Validation Technique:

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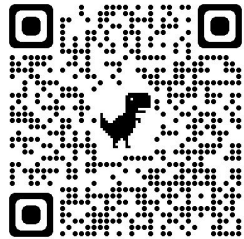   - **k = 10**
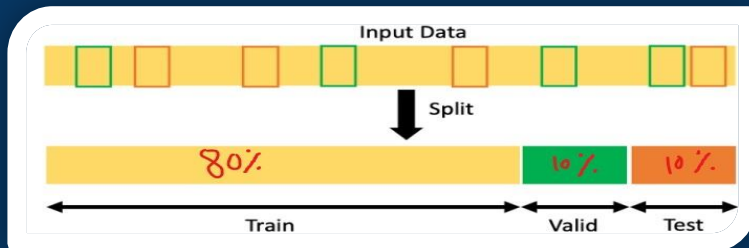
Technologies That May Be Utilized

Questions & Answers

Connect with us on LinkedIn!

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