Sentimental Smacking: An ML Toolkit Exploration

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Problem: Sentiment Analysis

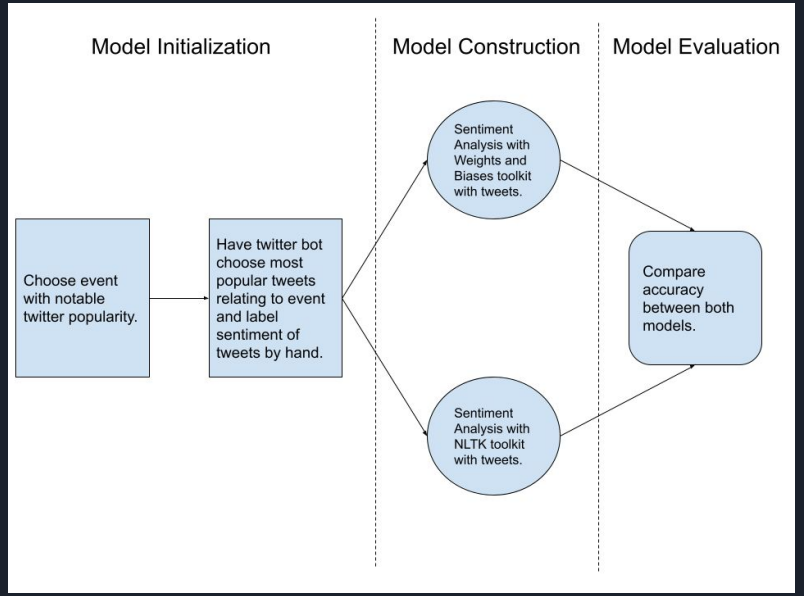
- Sentiment analysis is relevant in a wide range of areas across computing.
- But for non-programmers, do popular ML toolkits provide enough functionality for NLP tasks? Additionally, what is the tradeoff between usability and performance?
- We decided to answer with a popular event that caused social media commotion.

What event was that?

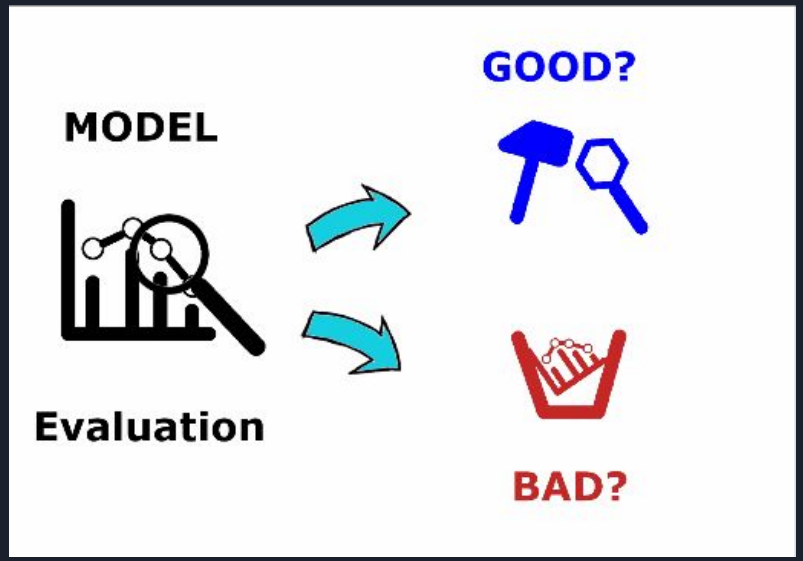
Pictured: Will Smith striking Chris Rock after making a joke about Jada Pinkett Smith's lack of hair due to alopecia at the 2022 Oscars ceremony.

Design

- Step 1: Initialization
  - After choosing a popular event, use our in-house Twitter bot to find tweets pertaining to event.
- Step 2: Construction
  - Perform sentiment analysis on tweets with:
    - Weights and Biases (popular GUI ML toolkit).
    - NLTK (popular NLP library for industry).



Evaluation



- Step 3: Evaluation
  - Obtain accuracy scores from outputs of models.
  - Scores will be compared between models to determine the model that performs best for Twitter sentiment analysis.

Software Engineering Investigation

Functional requirements to investigate (for both models:	Non-Functional Requirements to investigate (for both models):
• Ability to parse and tokenize all types of tweets made up of purely text • Ability of twitter bot to reliably fetch tweets based on query • Ability of models to output sentiment corresponding to available labels	• Usability • Documentation • Performance (on potentially large datasets) • Extensibility • Testability

Plan

Roles:

- **Jarred - Software Engineer**
  - Handle Twitter Bot and model creation
- **Jeffrey - Data Scientist**
  - Handle data-driven operations and analysis

Timeline:

1. Create Twitter Bot to gather data - April 8
2. Perform sentiment analysis using both ML models. - April 15
3. Compare accuracy scores of both models. - April 22
4. Document findings in tidied report along with software investigation - April 29