SENTIMENT ANALYSIS

Understanding Sentiment with
Natural Language Processing & Machine Learning

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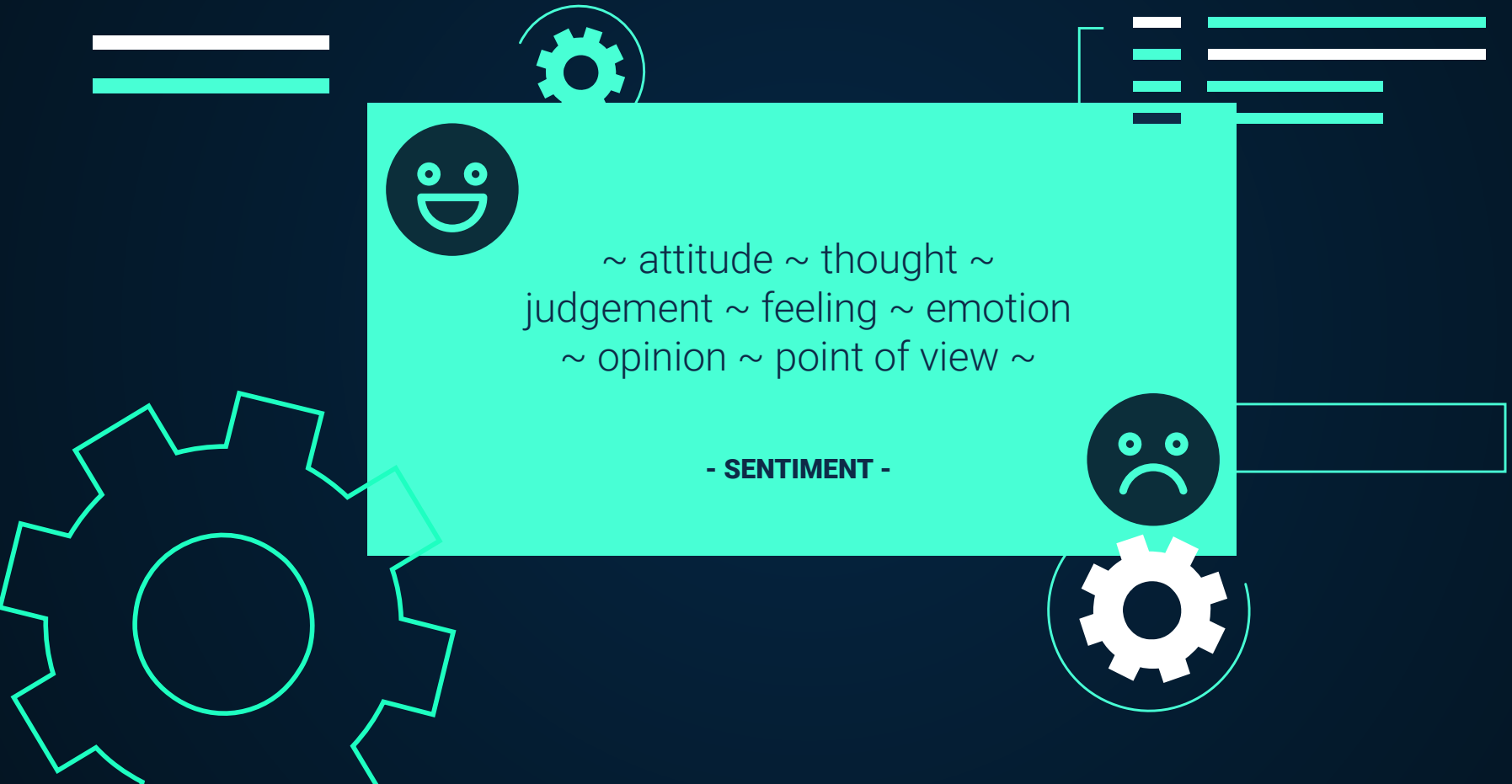
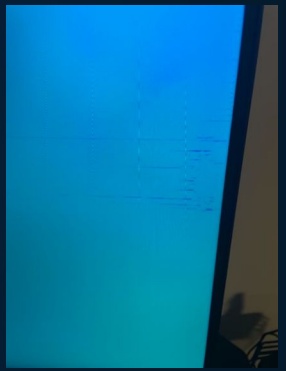

~ attitude ~ thought ~
judgement ~ feeling ~ emotion
~ opinion ~ point of view ~
- SENTIMENT -

amazon


LIVIVA
RICE SHAPED
EN FORME DE GRAINS DE RIZ
LOW CALORIE / FAIBLE EN CALORIES
400 g


LIVIVA
RICE SHAPED
EN FORME DE GRAINS DE RIZ


GIGABYTE
27" QHD KVM Gaming
170 Hz
0.5MS
IPS



PROJECT GOAL

- Attain high accuracy model with predicting sentiment
  - POSITIVE/NEUTRAL/NEGATIVE
- Deploy web application integrated with model
  - providing insight on trends about the sentiments
  - contribute towards business solutions

CHALLENGES

01 SUBJECTIVITY & TONE

02 HUMAN ANNOTATOR ACCURACY

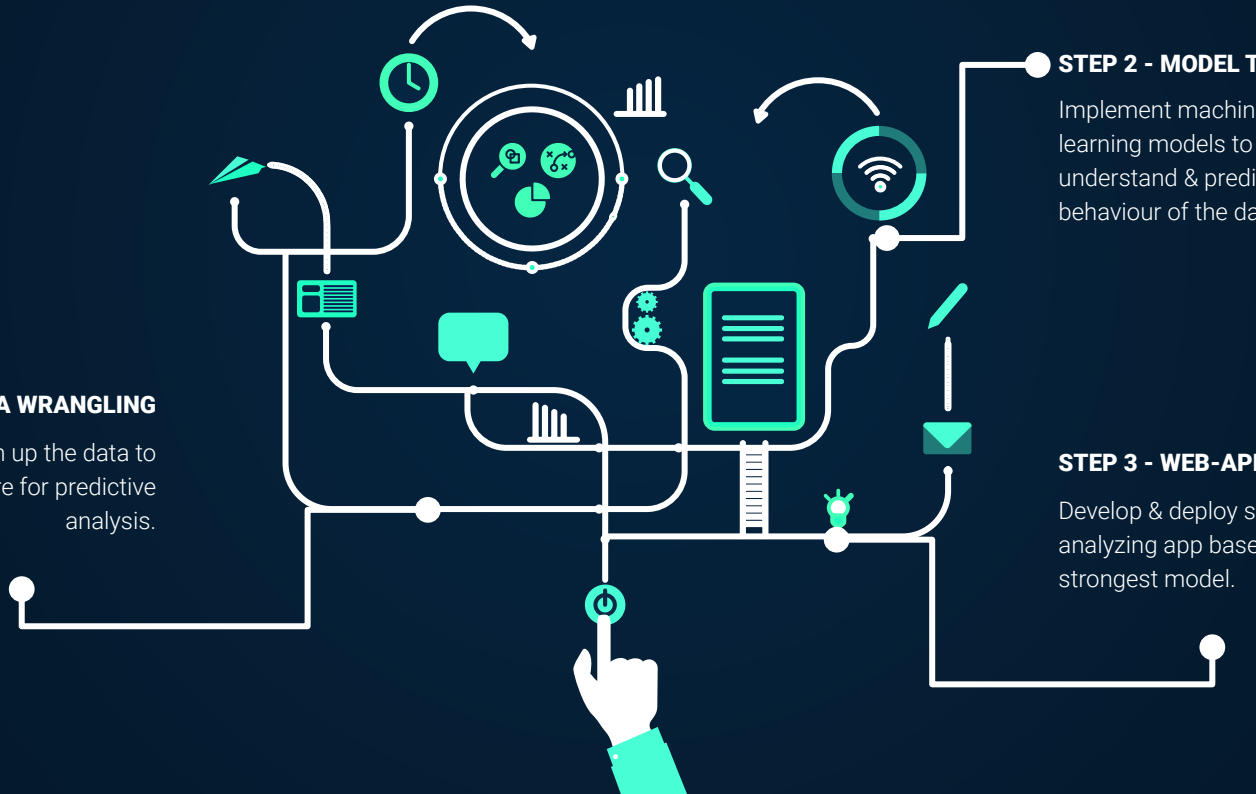
03 COMPARISONS

04 CONTEXT & POLARITY

05 IRONY & SARCASM

06 DEFINING NEUTRAL

FRAMEWORK



STEP 1 - DATA WRANGLING

Clean up the data to prepare for predictive analysis.

STEP 2 - MODEL TRAINING

Implement machine learning models to understand & predict the behaviour of the data.

STEP 3 - WEB-APP DEPLOYMENT

Develop & deploy sentiment analyzing app based on strongest model.

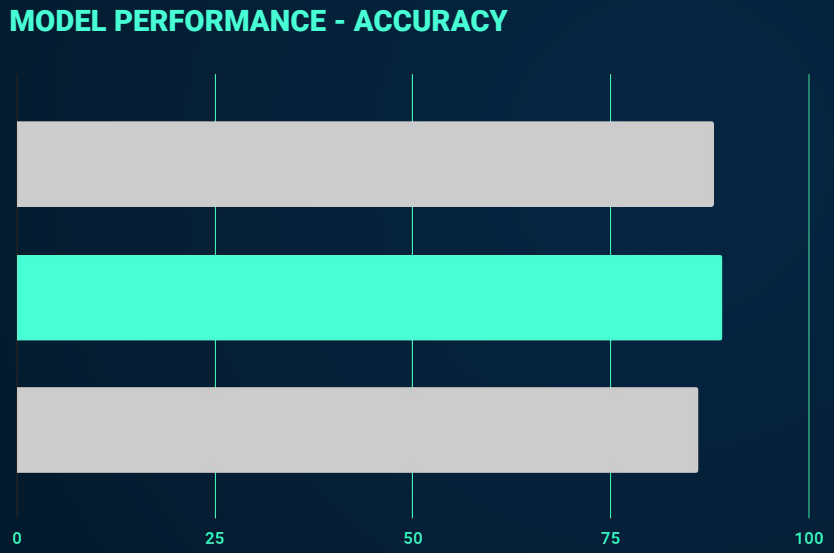
TECH STACK


python
TensorFlow
pandas
Keras
NumPy
plotly
jupyter
Streamlit

DATA

- Source: Stanford University
- Contents: 25000 IMDB movie reviews
  - 12500 labeled
    - positive (7-10 ratings)
    - negative (0-4 ratings)
- Training limitation - neutral reviews omitted

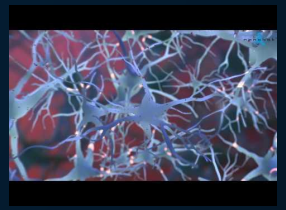
MODELING RESULTS



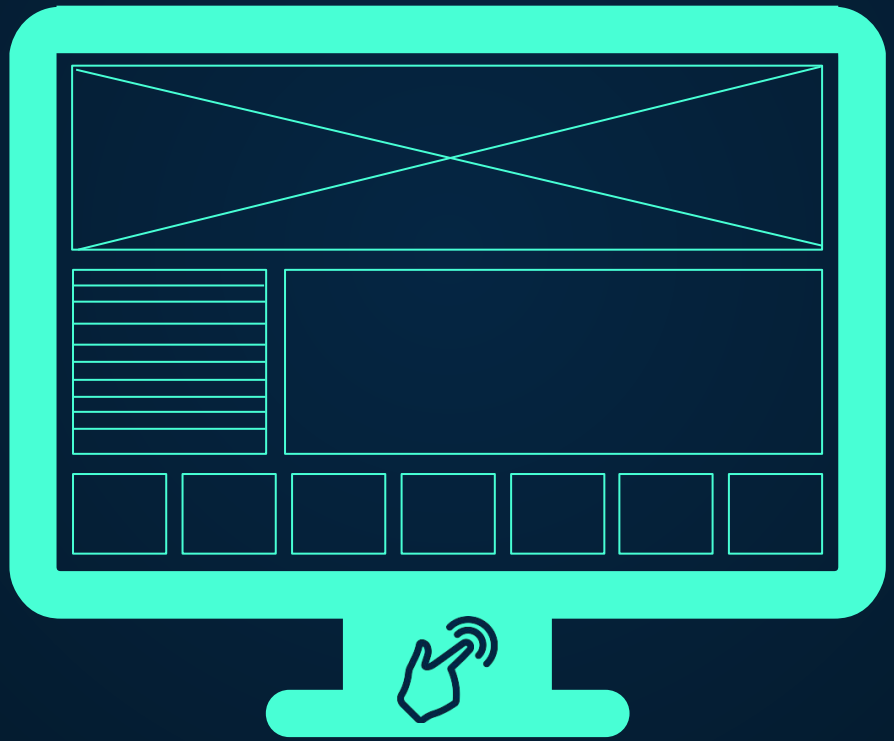
88%
REGRESSION

89%
NEURAL NETWORK

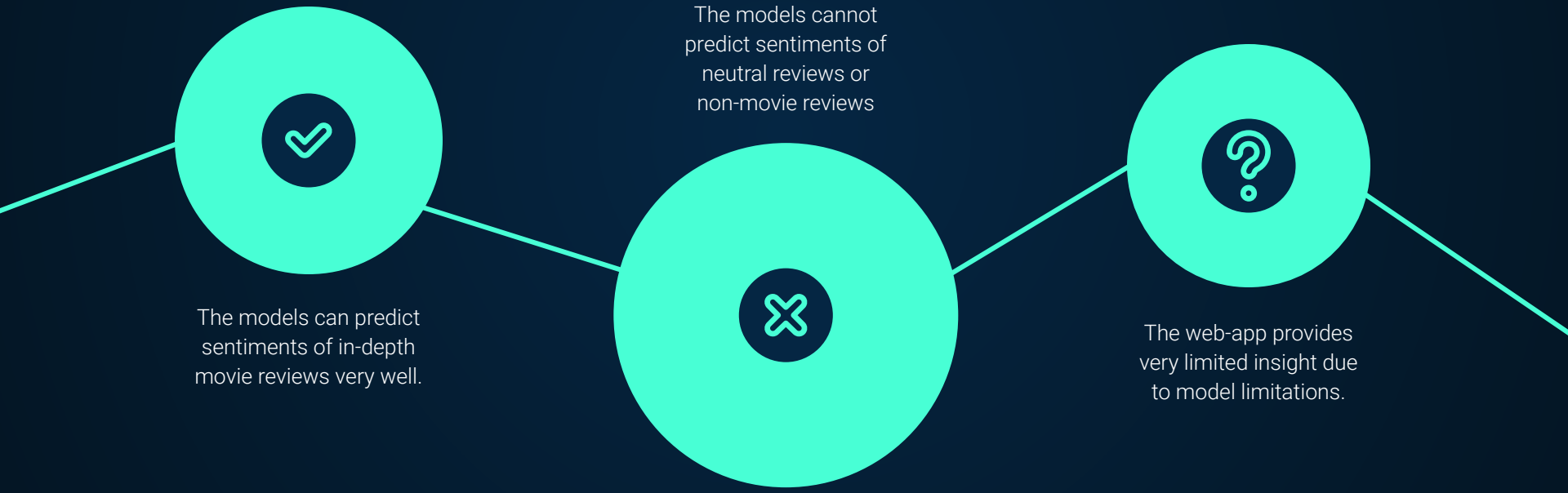
86%
TRANSFORMER



WEB APP DEMO



CONCLUSION


The models can predict sentiments of in-depth movie reviews very well.
The models cannot predict sentiments of neutral reviews or non-movie reviews
The web-app provides very limited insight due to model limitations.

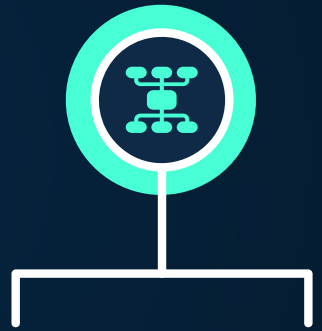
NEXT STEPS

DASHBOARD IMPROVEMENTS

- Date trend-analysis
- Common words extraction
- Sentence extraction
- Competitor reviews

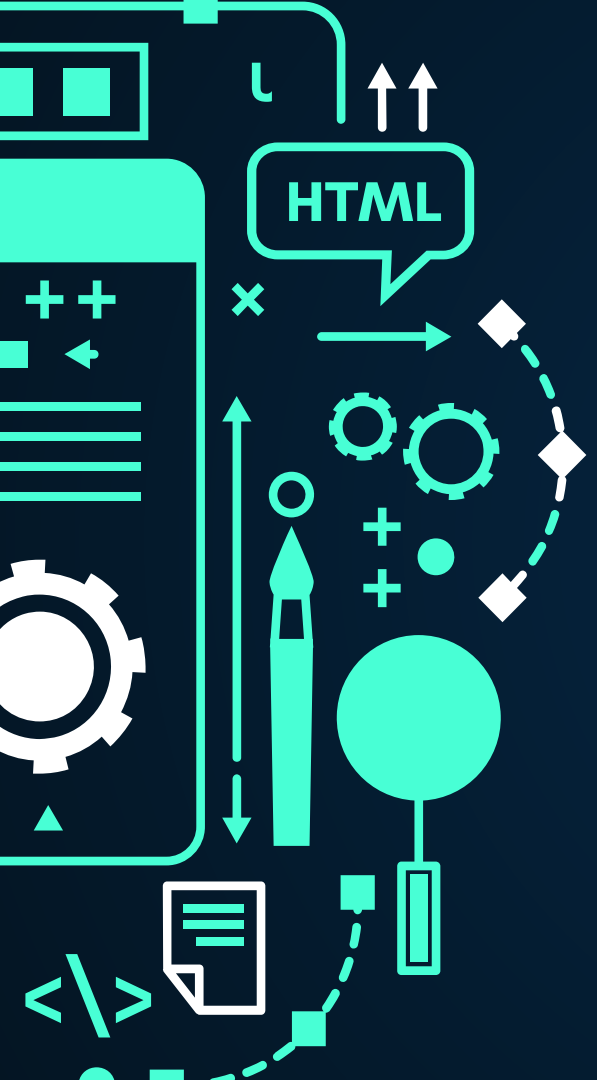
OTHER DATA

- Speech-to-text conversations
- Other product/services types (ex. Amazon product reviews)



OTHER TYPES OF SENTIMENTS

- Emotion-based
- Grade-based (ie. stars/levels)



THANKS!

Does anyone have any question?