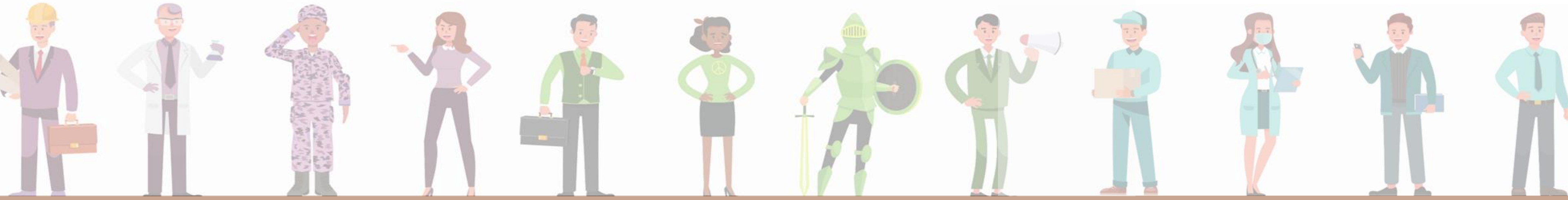
Predicting MBTI Personality Types With Text Data

“You are what you say”

By Jojo Zhou



Motivations

- Knowing your personalities → higher EQ, better decisions, …

- Myers-Briggs Type Indicator (MBTI):
  - Energy -- Extraversion (E) vs. Introversion (I)
  - Information -- Sensing (S) vs. Intuition (N)
  - Decisions -- Thinking (T) vs. Feeling (F)
  - Lifestyle -- Judging (J) vs. Perceiving (P)

- Reasons for a ML model based on texts:
  - Traditional introspective questionnaires are subject to Self-Report Bias
  - Faster, scalable, and practically easier to use

DEMO

http://msia423-1166961.us-east-2.elb.amazonaws.com/

Data Source and RDS Usage

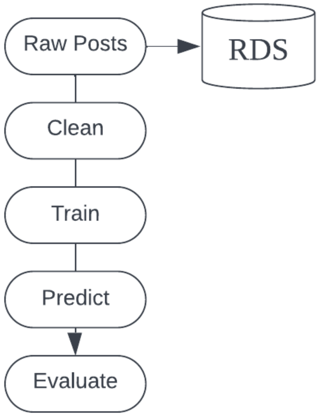
- Kaggle Dataset:
  - (MBTI) Myers-Briggs Personality Type Dataset by MITCHELL J.
  - PersonalityCafe forum, a social media platform that people post and share their MBTI types

- Data Structure
  - 8600 rows of data, one row for one person
  - 2 columns:
    - Type (e.g. INTJ)
    - Posts (last 50 posts separated by "|||", uncleaned)

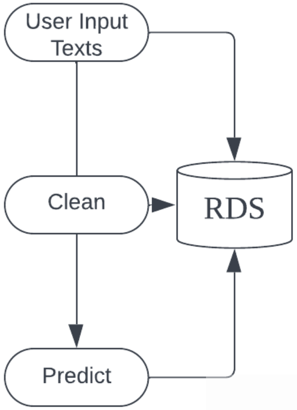
- Data Cleaning
  - Replace url with "link"
  - Remove punctuations
  - Convert to lower cases
  - Lemmatize (NLTK package)

    Stopwords (NLTK package)

- RDS stores:
  - Raw posts data for training
  - Raw user input texts, cleaned texts, and predicted MBTI type



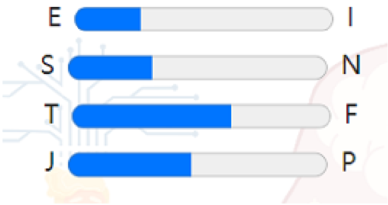
run.py



app.py

Models and Success Metrics

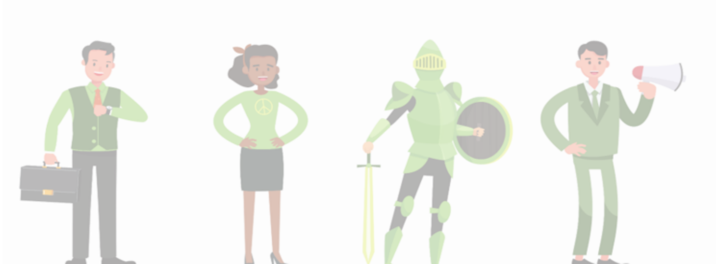
- Models/Approaches
  - TF-IDF vectorizer
    - Max features = 5000
    - Same stopwords as in clean.py
  - Binary Logistic Regression models
    - One model for each dichotomy
      → 4 binary classification models
    - Return 4 pairs of predicted probabilities



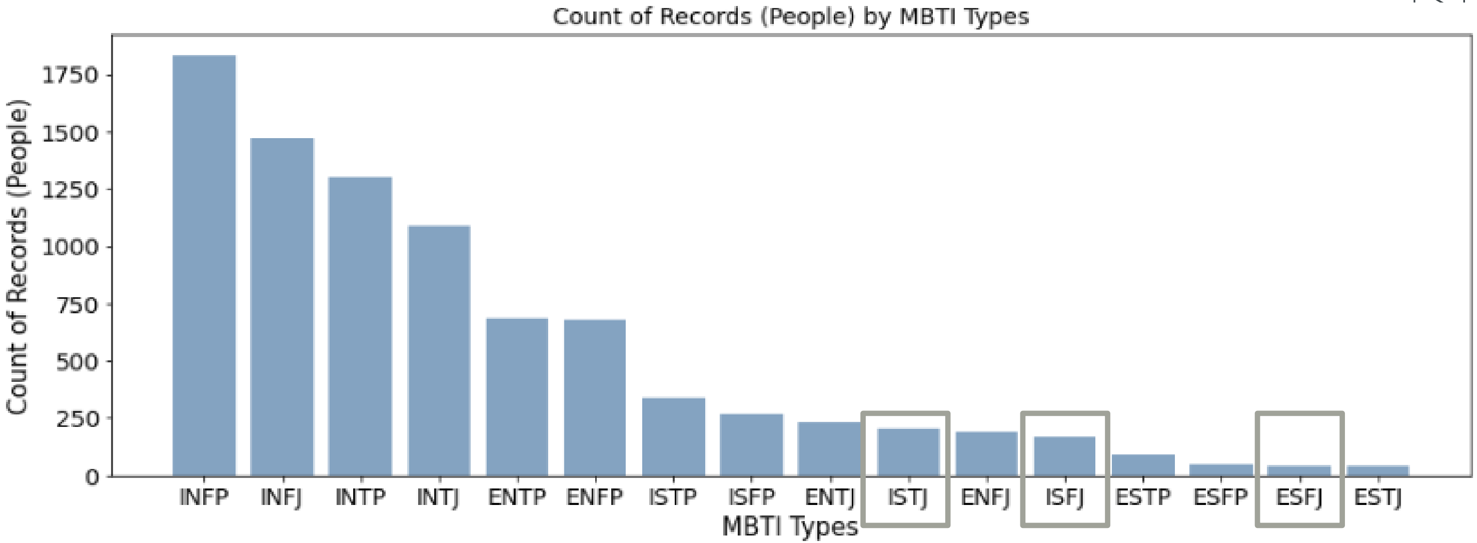
- Online Model
  - Input texts from the web app go through the same cleaning, vectorization, and predicting process as in run.py

- Success Metrics
  - Imbalanced data
    -> accuracy scores are misleading
  - averaged F1-score across all the dichotomous pairs

- Evaluation Results (80-20 train-test split)
  - Previous goal: **0.7**
  - Test result: **0.83**
    - E vs. I – 0.82
    - S vs. N – 0.87
    - T vs. F – 0.86
    - J vs. P – 0.77



Interesting Findings



- Much more I's than E's
- Much much more N's than S's
- Inconsistent with the distribution published by myersbriggs.org between 1972 and 2002, which said ISFJ, ESFJ, and ISTJ are the three most frequent types

Thank you

Do you have any questions?

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