

Analysts

Diplomats

# Real-Time MBTI Detection based on Speech Data

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Sentinels

Explorers

전지훈



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EXECUTIVE  
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CONSUL  
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VIRTUOSO  
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ADVENTURER  
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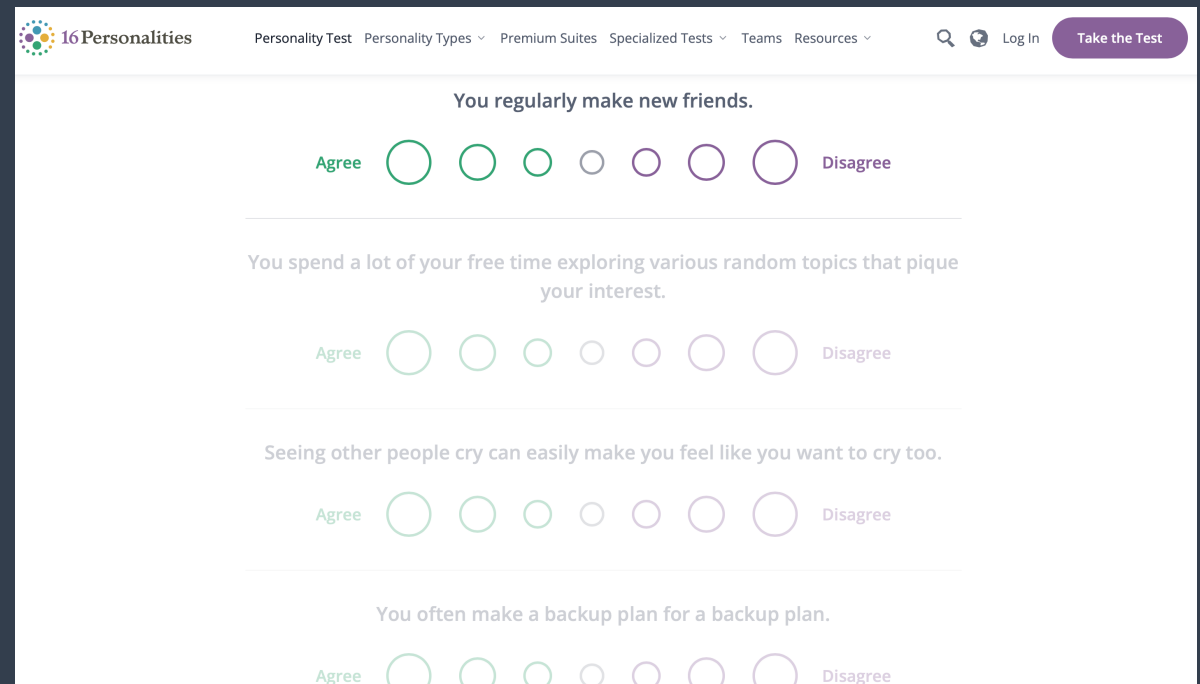
ENTREPRENEUR  
ESTP (-A/-T)



ENTERTAINER  
ESFP (-A/-T)

# Background

- Widely used personality classification system
  - E<sub>(Extrovert)</sub> VS I<sub>(Introvert)</sub> / S<sub>(Sensing)</sub> VS N<sub>(iNtuition)</sub> / T<sub>(Thinking)</sub> VS F<sub>(Feeling)</sub> / J<sub>(Judgement)</sub> VS P<sub>(Perception)</sub>
- Based on manually-taken test
  - Highly demanding
  - Prone to self-deception
  - Vague questions



The screenshot displays the 16Personalities website interface. At the top, the navigation bar includes the logo, "16Personalities", and links for "Personality Test", "Personality Types", "Premium Suites", "Specialized Tests", "Teams", and "Resources". There are also search, login, and "Take the Test" buttons. The main content area shows four personality test questions, each with a Likert scale from "Agree" to "Disagree". The first question is "You regularly make new friends." with the second circle selected. The second question is "You spend a lot of your free time exploring various random topics that pique your interest." with the first circle selected. The third question is "Seeing other people cry can easily make you feel like you want to cry too." with the first circle selected. The fourth question is "You often make a backup plan for a backup plan." with the first circle selected.

16Personalities

Personality Test Personality Types Premium Suites Specialized Tests Teams Resources

Log In Take the Test

You regularly make new friends.

Agree ☒ ☐ ☐ ☐ ☐ ☐ ☐ Disagree

You spend a lot of your free time exploring various random topics that pique your interest.

Agree ☐ ☒ ☐ ☐ ☐ ☐ ☐ Disagree

Seeing other people cry can easily make you feel like you want to cry too.

Agree ☐ ☒ ☐ ☐ ☐ ☐ ☐ Disagree

You often make a backup plan for a backup plan.

Agree ☐ ☒ ☐ ☐ ☐ ☐ ☐ Disagree

# Previous works

- Text-based automatic MBTI Detection
  - Several works (mostly based on simple classification ML models)
  - Public dataset (e.g., Kaggle, Twitter) exists
  - Web API also available
- Limitations
  - Need to prepare one's text data in advance
  - Unimodal & Outdated (No use of SOTA LMs)
  - Poor performance<sup>1</sup>

The screenshot shows the uClassify website's interface for the Myers Briggs Type Indicator Text analyzer. The header includes navigation links: uClassify, Classifiers, Translate, Docs, Pricing, About, Register, and Log in. The main heading is "Myers Briggs Type Indicator Text analyzer". Below it, a paragraph explains the tool's purpose: "Analyzes the cognitive functions used for a text according to the Myers-Briggs Personality Theory. A database with more than 20 thousand words combining the slang words, words and phrase constructions most used by each type of personality, obtained in forums and controlled blogs. Please keep in mind that this test does not serve as an MBTI personality test, most people fluctuate between two or more types depending on the situation or subject, people can change mental state, for example, an INTP personality type talking about the past can be typed as a type of personality that uses the cognitive function Si, since this test only evaluates the functions used in the text. In order to get an idea of what an individual's personality is, it is advisable to gather a considerable amount of text (500 to 1000 words for a decent analysis - 9000 for perfect) written by that person in order to discover their most used functions. Usually, you'd get a better result if you get the person to answer an open-ended question where they express an opinion. Constantly updating for more accurate results. Enjoy!". A note states: "(Note: It only works well with native English speaking people)". The author is listed as "by g4mes543". There are two buttons: "Classify Text" and "Classify Url". The "Classify Text" section shows a text input area with the sample text: "produced by the experts. Now that individual non-expert investors are significantly increasing in the stock market, and their information and opinions are highly abundant, it seems reasonable to extend the original Black-Litterman model to include the individual investors' opinions when constructing the 'view' matrix." Below the input is a "Classify" button. A green success message bar at the bottom says "Success Show REST XML URL". The results are shown as a horizontal bar chart for four personality types: INTJ (90%), INTP (6%), ENTP, and an unlabeled category (0%).

Personality Type	Percentage
INTJ	90%
INTP	6%
ENTP	0%
Other	0%

[1] Sanja Stajner. 2021. Why Is MBTI Personality Detection from Texts a Difficult Task?. Proceedings of the 16<sup>th</sup> EACL

# Key Idea & How to Implement

- Step 1: Speech recognition version
  - Basic step for integration of “speech” modality into MBTI detection task
  - Flow
    - Input audio → Text → Model (LM Pretrained on MBTI text data) Output
  - Base Model
    - Speech Recognition: Wav2Vec 2.0 (Available on Pytorch Mobile) or better model
      - Further finetuning is not in my plan as of now
    - Language Model: Llama-2 (Preferred; Server / MLC-LLM) or at least GPT-2 (Available on TFLite)
      - Further finetuning for MBTI classification task (In-batch Contrastive learning)

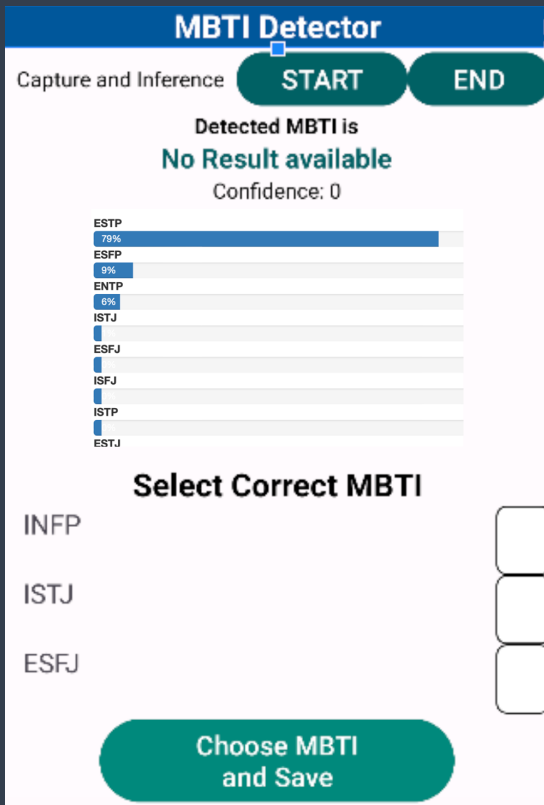
# Key Idea & How to Implement

- Step 2: Recognized Text + Audio Features (May or may not proceed)
  - Experimental step (Does Audio Features can really help? → Needs verification)
  - Flow
    - MBTI-labelled audio file → Text + Audio Feature → LM Model Output
  - MBTI-labelled audio data
    - App Functionality: Can Record voice data & Label MBTI on user's demand
    - Further data collection on YouTube: youtube → .wav converter for MBTI-known youtube videos
- Language + Speech Multimodal model (TBD) to be used for this step
  - Further finetuning based on MBTI-labelled audio data

# Key Idea & How to Implement

- Data Collection
  - For Step 1:
    - Publicly available MBTI text datasets from Kaggle (100K+ data available)
    - If insufficient, manually collect web texts written by ppl whose MBTIs are known (using Crawler)
  - For Step 2:
    - App Functionality: Can Record voice data & Label MBTI on user's demand
      - ➔ Continual Learning
    - Further data collection on YouTube: youtube➔.wav converter for MBTI-known youtube videos

# Key Functionalities (Not inclusive)



- Audio(Voice) Capture
  - START / END button
  - After END, Detection Result is rendered on TextView
    - Along with minimal graphical visualization of the classification
- If the result is incorrect or if the user just wants to label:
  - Choose correct MBTI and Save data
    - Gives an error if the chosen MBTI coincides with the inference result
  - Labelled data are used for future further training of the model

# Goal & Usage Scenario

- Instantaneous MBTI detection
  - Without laborious test-taking or providing texts written in the past
  - Less effort for figuring out others' MBTI
- Personalized MBTI tracker
  - MBTI is subject to change depending on one's experience & circumstances
  - “Change” if one's MBTI result deviates from previous dominant one, and persists
- (Advanced, May or may not proceed) Inter-MBTI Translation
  - Sufficient Data & Model Train → Implement Translation based on Generation



# Project Timeline

- Step 1
  - 1<sup>st</sup> Week (~11/5): Implement Speech Recognition on App
  - 2<sup>nd</sup> Week (~11/12): Implement LM-based MBTI classification
  - 3<sup>rd</sup> Week (~11/19): Implement Model Fine-tuning based on user-provided data
- Step 2 [If Step 1 is completed on time]
  - 4<sup>th</sup> Week (~11/26): MBTI-labelled audio data collection
  - 5<sup>th</sup> Week (~12/3): Implement Speech + Language Multimodal Model on APP
  - 6<sup>th</sup> Week (~12/10): Inter-MBTI Translator [If above all are completed on time]

## Analysts



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# Q & A

## Sentinels



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