The Myers–Briggs Type Indicator (MBTI)

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Abstract

Using Naive Bayes Classifier in NLTK and dataset of MBTI from Kaggle, I trained 4 classifiers to determine a person's personality based on their public posts. The classifiers are around 60% accurate in each trait they determine. Following this, I define a function where the user only inputs their posts and outputs a graph determining his/her traits with percentage based information and the final personality types.

Motivation

It is very intriguing to know that different personalities posts differently on social media. They tend to write differently, moreover they even choose different topics to talk about. Having studied MBTI in my psychology course in highschool, I wanted to explore it with the dataset available to me, provided by kaggle. Moreover, knowing a person's trait, their likes and dislikes the social media companies could make the user experience better.

Moreover, I wanted to see if it could really be possible as for psychologists to determine the personality with accuracy a person needs to answer a long series of questions, but a machine could do it faster.

Dataset(s)

The dataset was taken from Kaggle. It’s called The Myers–Briggs Type Indicator (MBTI). It includes a lot large number of people's MBTI type and content written by them. 50 posts by 8600 people along with their 4 letter MBTI-code.
Here is the link to the dataset:

https://www.kaggle.com/datasnaek/mbti-type

Also, I used my quora answers to determine my personality through the classifier. Here, is the link to that.

https://www.quora.com/profile/Divya-Bramhecha

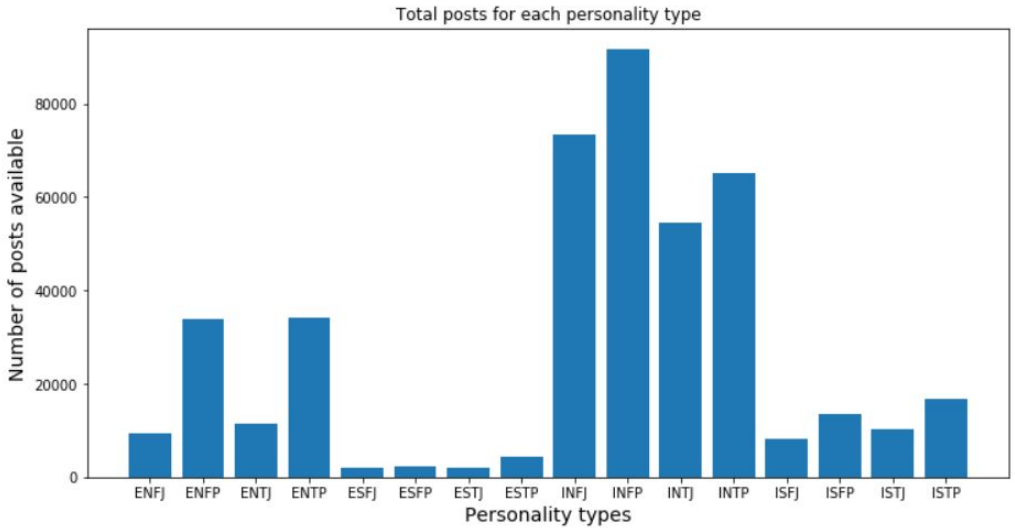
Data Preparation and Cleaning

Luckily the dataset was complete and had no missing values. It was a little bit of trouble because the dataset was not organised. As my project targeted personality types, there were uneven distributions of the number of posts per personality types.

Please refer to the notebook for steps regarding data exploration.

```
In [3]: data_set.isnull().any()

Out[3]: type     False
        posts    False
        dtype: bool
```



Research Question(s)

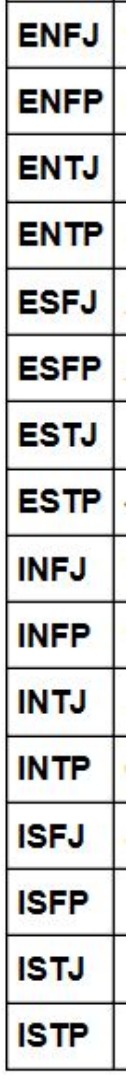
How accurately can you use a person's public posts to determine their personality type? (Based on MBTI)

Methods

I decided to use NLTK to classify the whether the it belonged to one of the 16 personality types. I used Bayes classifier.

The dataset consisted of 50 posts per person clubbed together in a data frame. Each post was separated by '|||'. Hence, I had to split the the data of each person and then merge it into one personality type. Following this, I had to tokenize the words and create a bag of words model. Then I create an array of the specific features.

This resulting dataset had to be divided between train and test. Because there were uneven number of of posts by each personality type, i divided the training dataset by selecting 80% of each personality type.



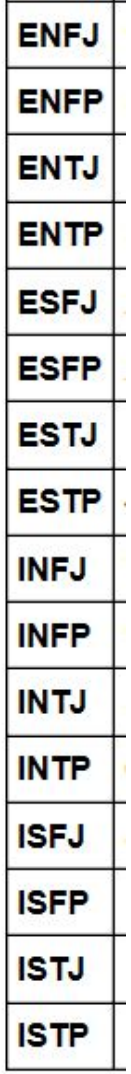
Methods

- Introversion (I) – Extroversion (E)
- Intuition (N) – Sensing (S)
- Thinking (T) – Feeling (F)
- Judging (J) – Perceiving (P)

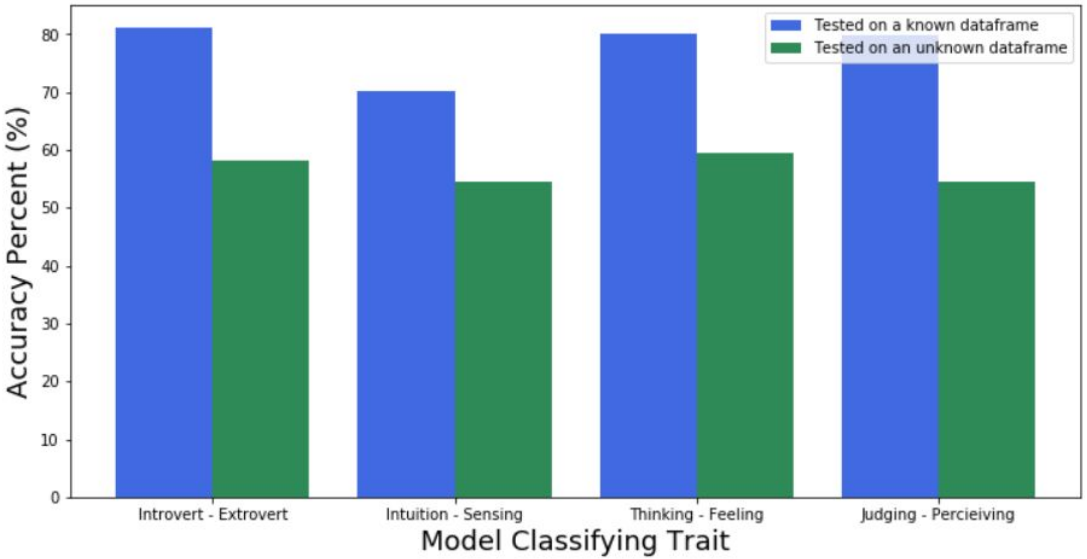
While exploring the outcome I implemented them as 16 different categories. This resulted in a very bad probability of the model being able to predict with only 43% accuracy on the dataset it had seen and with around 12% probability to predict on unseen dataset.

Hence, I decided to create 4 classifiers based on the MBTI traits. (repeated the same process as described in the previous slide)

Following this, I defined a function that would just input the posts of the person and return their personality type with percentage based data.



Findings



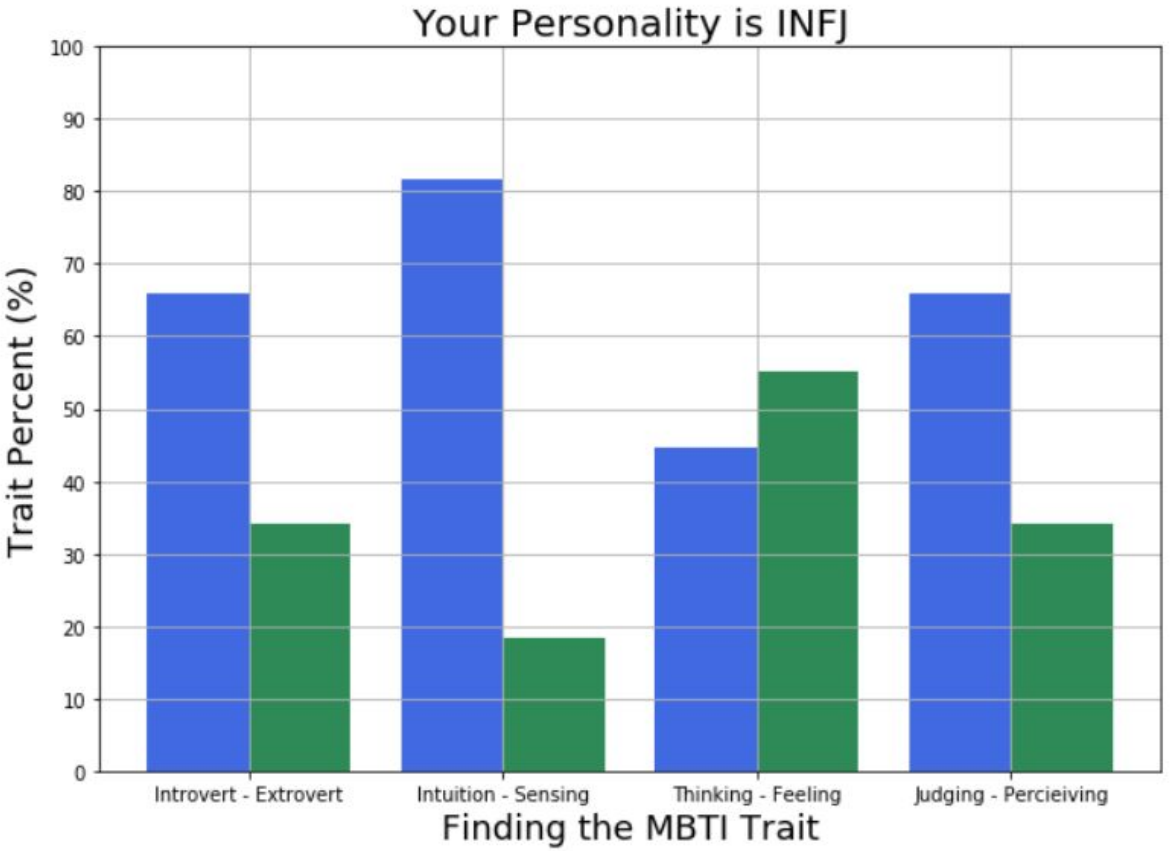
	Introvert - Extrovert	Intuition - Sensing	Thinking - Feeling	Judging - Percieiving
train	81.124440	70.145242	80.034569	79.793411
test	58.204693	54.462623	59.413152	54.405496

Each blue-green column pair represents a trained classifier.

By dividing the labels into 4 types of traits and implementing them improved the results far better than expected.

You know by experience that it is not an easy task to predict a person's personality by just reading few posts.

Yet, this seems to do it pretty well.

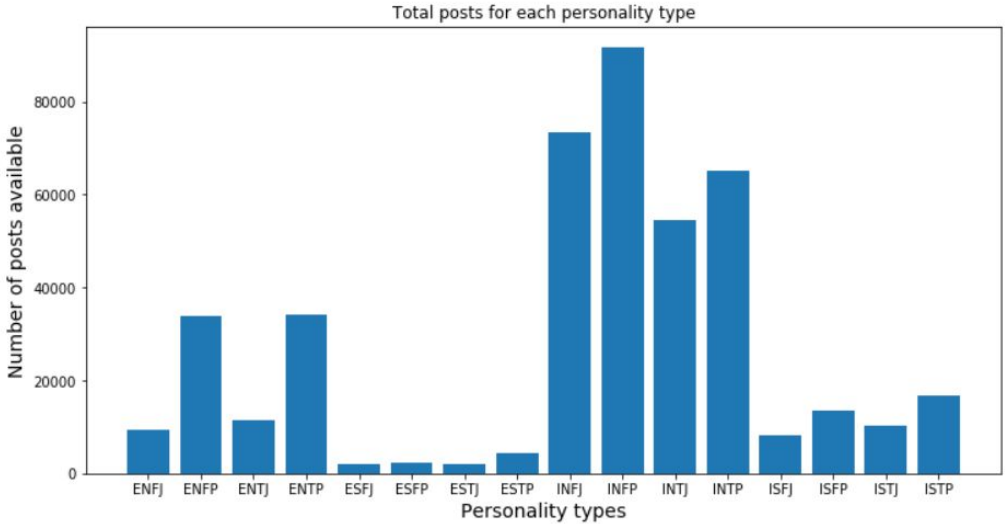


Implementing the function I made for returning the personality type on my quora answers. (link was provided earlier)

My personality type happens to by INTJ. This was pretty close as the only attribute which was debatable was Thinking-Feeling. Moreover, I had very few answers to input compared to the amount of posts it was used to seeing, i.e. 50.

If you all want to let the classifier determine your personality please do so and let me know the results. Note: to do that you will have to create a text file of and have each posts separated by '|||'.

Limitations



Personality types like ESFJ, ESFP, ESTJ and ESTP basically have no data for the classifiers to learn from.

A major reason the accuracy wasn't higher was because the dataset was limited. It was unevenly distributed between the personality types, hence the classifiers did not have enough information regarding the some of the personality types.

Conclusion

Using a basic classifier like Naive Bayes Classifier I was able to get some significant results. Implementing these on a bigger dataset could produce astonishing results which might actually be much better than a human judging someones personality.

Currently, I was able to determine each trait with around 60% accuracy despite the limited dataset.

Moreover, implementing something with a better learning curve like neural networks might help us determine a person's personality with better accuracy.

Acknowledgements

I did the project by myself.

References

I referred to the documentations from Pandas, Matplotlib and NLTK.

The dataset was taken from Kaggle.

I was better informed about how the traits work, their connotations, and how they are determined by https://16personalities.com.