Romanagari Detection in Twitter

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Motivation

- Why Twitter?
- Most NLP techniques deal with English text only
- Tweets are often of the form:

“Yeh kaisi field placings lagayi hain? Powerplay mein slip? Via @ARangarajan1972 #IndvsPak ”

Romanagari = Noise

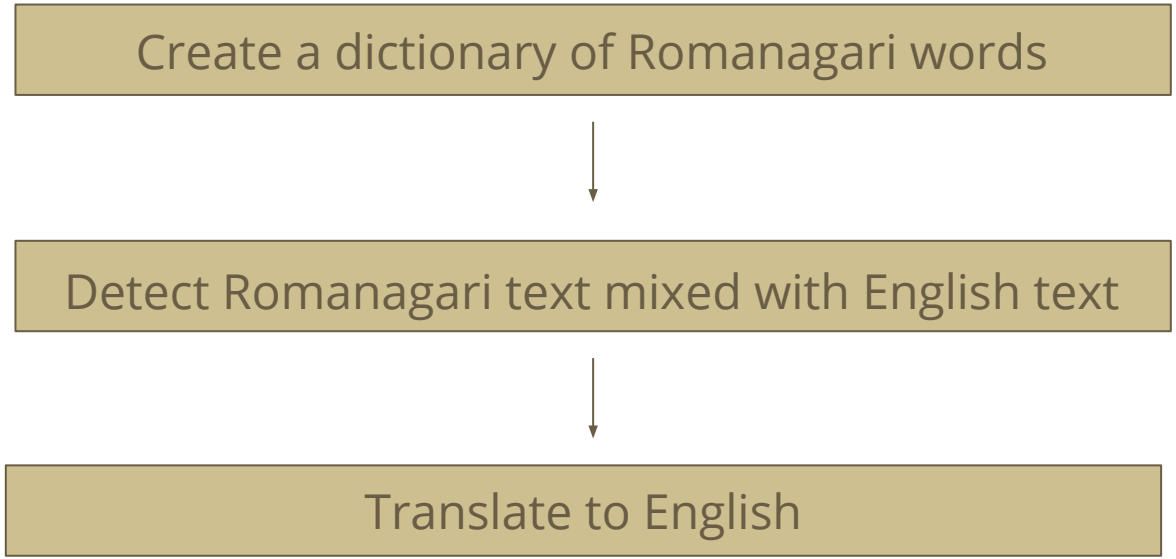
Goal

- Collect and create a quality tweet-dataset containing Romanagari words
- Romanagari Text Detection
- (possibly) Translate to English language

Languages Targeted

- Hindi

Steps


Create a dictionary of Romanagari words
Detect Romanagari text mixed with English text
Translate to English

Sounds easy?!

Challenges

1. Data Collection
    i. Search terms
    ii. Noise (different languages)
    iii. Disambiguation (polysemy in Hindi and English)

2. Detect and differentiate between English and Romanagari text
    i. Phonetic typing
    ii. SMS language
    iii. Spelling errors
    iv. Disambiguation

Challenges

3. Handle commonly occurring inflections in the social media text
    i. whatttttttt!, whennnn??, kyunnnn??
    ii. mann, bool, bol

4. And many more (yet to be encountered)

Approach

1. Data
    i. Collection
        - ➢ Frequent Romanagari words
        - ➢ Tweepy
        - ➢ SMS language
    ii. Synthetic Generation

2. Language detection/correction
    i. Tools available (PyEnchant, langid, langdetect, guess-language etc)

3. Almost phonetic representations
    i. Metaphone
    ii. Double Metaphone
    iii. Soundex

    - ➢ Also used for Romanagari text detection

Strategies

- Find frequently used Romanagari words in tweets/social media. (Different from “most frequent” Hindi words from other corpora such as books / wiki)

- Try to obtain annotated-datasets from social media such as facebook from existing papers and frequency analysis on this smaller “spoken-hindi” dataset.

- Context analysis (if possible)
    - ➢ n-grams

So far..

- ➔ Python
- ➔ Twitter collection
  - most frequent hindi words as FILTER
  - low success rate on tweets + lot of noise
  - explored synthetic generation [3]
- ➔ Exploration of existing classifiers
  - *PyEnchant*: a spellchecking library for Python based on Enchant
  - *langdetect*: python implementation of “language-detection” Java library
  - *langid*: language identification, n-gram, 97 languages, scores for multiple languages
- ➔ Soundex / Metaphone Experiments

Soundex vs Double Metaphone

“kyun”

```
>>> s("kyun")
'K50000'
>>> s("kyunn")
'K50000'
>>> s("kyunnnnn")
'K50000'
```

```
>>> doublemetaphone("kyun")
('KN', '')
>>> doublemetaphone("kyunn")
('KN', '')
>>> doublemetaphone("kyunnnnn")
('KNNN', '')
```

“haan”

```
>>> s("haan")
'H50000'
>>> s("haaaannn")
'H50000'
```

```
>>> doublemetaphone("haan")
('HN', '')
>>> doublemetaphone("haaaannn")
('HNN', '')
```

“what”

```
>>> s("what")
'W30000'
>>> s("wwhaaattt")
'W30000'
```

```
>>> doublemetaphone("what")
('AT', '')
>>> doublemetaphone("wwhaaattt")
('TT', '')
```

Soundex vs Double Metaphone

"burp"

```
>>> s("burp")
'B61000'
>>> s("burrrrppp")
'B61000'
```

```
>>> doublemetaphone("burp")
('PRP', '')
>>> doublemetaphone("burrrrppp")
('PRRPP', '')
```

"boom"

```
>>> s("boooooooooom")
'B50000'
>>> s("boom")
'B50000'
>>> s("boon")
'B50000'
```

```
>>> doublemetaphone("boooooooooom")
('PM', '')
>>> doublemetaphone("boom")
('PM', '')
>>> doublemetaphone("boon")
('PN', '')
```

"lol"

```
>>> s("lol")
'L40000'
>>> s("lollll")
'L40000'
```

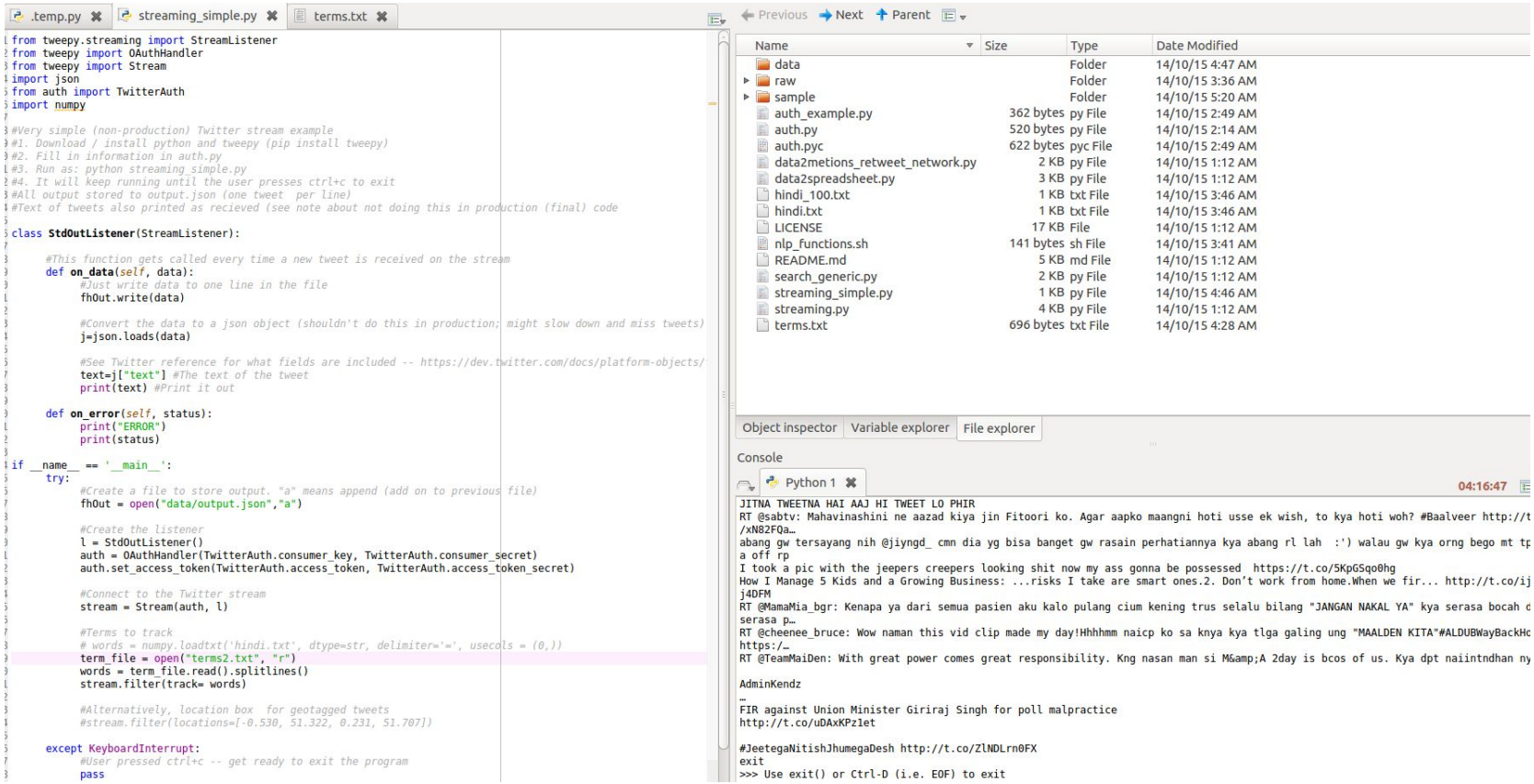
```
>>> doublemetaphone("lol")
('LL', '')
>>> doublemetaphone("lollll")
('LLL', '')
```

"ah / oh"

```
>>> s("ah")
'A00000'
>>> s("aaahhh")
'A00000'
>>> s("ohhh")
'O00000'
>>> s("ooohhh")
'O00000'
```

```
>>> doublemetaphone("ah")
('A', '')
>>> doublemetaphone("aaahhh")
('A', '')
>>> doublemetaphone("ohhh")
('A', '')
>>> doublemetaphone("ooohhh")
('A', '')
```

Tweet Collection



Plan

- ➔ Better dataset collection strategies
- ➔ Better synthetic generation than mentioned in [3]
- ➔ Perform experiments to test feasibility of Soundex/Metaphone for Hindi
- ➔ Pre-processing tweets followed by language identifiers with modification
- ➔ Compose a list of Hindi-specific disambiguation rules
- ➔ Detect Romanagari words
- ➔ Annotate / Attach English meaning to Romanagari words

References

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Questions?

Thank You