CMPE 409 Machine Translation

Worksheet(Week-03)

1 Download NLTK

Download NLTK package with following instructions

```
>>> import nltk
>>> nltk.download()
```

2 Test WordNet

```
>>> from nltk.corpus import wordnet as wn
>>> wn.synsets('motorcar')
>>> wn.sysets("book")
>>> wn.sysets("fall")
>>> wn.sysets("car")
## See how many synsets you will get from each instructions
```

Print out synonymous names of each syn sets: For Example:

```
wn.synset('car.n.01').lemma_names()
```

Print out definitions and example related synset : For Example:

```
>>> wn.synset('car.n.01').definition()
>>> wn.synset('car.n.01').examples()
```

3 Working with Lemmas

Format of Lemma:

```
car.n.01.automobile
car.n.01.motorcar
```

```
1. Get all the lemmas for a given synset

    >>> wn.synset('car.n.01').lemmas()

2. Look up a particular lemma

  >>> wn.lemma('car.n.01.automobile')

3. Get the synset corresponding to a lemma

>>> wn.lemma('car.n.01.automobile').synset()

4. Get the "name" of a lemma

>>> wn.lemma('car.n.01.automobile').name()
```

Compare following statements

```
>>> wn.synsets('fruit')

## check what do you get

>>>for synset in wn.synsets('fruit'):
       print(synset.lemma_names())

## check it again
```

4 WordNet Relation- IS-A

Test **hyponyms**

```
motorcar = wn.synset('car.n.01')
>>> types_of_motorcar = motorcar.hyponyms()
>>> types_of_motorcar[0]
```

```
## check the ouput

>>> sorted(lemma.name() for synset in types_of_motorcar for lemma in synset.lemmas(
## check the results
```

Test **hypernyms**

```
 >>> motorcar.hypernyms()
## what do you see?

>>> paths = motorcar.hypernym_paths()
>>> len(paths)
## what is the output

>>> [synset.name() for synset in paths[0]]
#A:  What are ouputs

>>> [synset.name() for synset in paths[1]]
#B:  what are outputs
```

Explain difference between A and B

5 WordNet Relation- Part-OF

Test **meronyms - holonyms**

```
 >>> wn.synset('tree.n.01').part_meronyms()
 ## check the outputs


>>> wn.synset('tree.n.01').substance_meronyms()
## check the outputs

>>> wn.synset('tree.n.01').member_holonyms()
## check the outputs

Test this relation with the word: "animal"
```

6 WordNet Relation- antonyms

```
>>> wn.lemma('supply.n.02.supply').antonyms()
## check the outputs

>>> wn.lemma('rush.v.01.rush').antonyms()
## check the outputs

>>> wn.lemma('horizontal.a.01.horizontal').antonyms()
## check the outputs

>>> wn.lemma('staccato.r.01.staccato').antonyms()
## check the outputs
```

Find antonyms of the following words:
Good, White, Hot, Sweet.

7 WordNet Synset Similarity

```
#!/usr/bin/env python3
# -*- coding: utf-8 -*-
"""
Created on Wed Mar 23 14:02:01 2022

@author: murat
"""

from nltk.corpus import wordnet as wn
syn=wn.synsets("cookbook")[0]
print(syn)

print(syn.hypernyms())
print("gives parent")
#print(syn.hyponyms())

cb= wn.synset('cookbook.n.01')
cr=wn.synset('reference_book.n.01')

print(cb.wup_similarity(cr))
```

```
a=wn.synsets("animal")[0]
print(a)

c=wn.synsets("bird")[0]
print(c)

b=wn.synsets("eagle")[0]
print(b)

print(a.wup_similarity(b))


k=wn.synset("entity.n.01")
print(k.min_depth())
print(a.min_depth())
print(c.min_depth())
print(b.min_depth())

## check ouputs
```

8 Uploading

Show your work to your instructor and upload to learn

9 Resource

This worksheet is prepared from the following books:

- Jacob Perkins, **Python 3 Text Processing with NLTK 3 Cookbook, Packt Publishing**,ISBN: 9781782167853
- Steven Bird, Ewan Klein & Edward Loper, Natural Language Processing with Python, O'Reily, June, 2009