

NLP Lab 6

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Topic: Wordnet Synsets and Sentiments

The word I chose for my analysis is “hit” which has both positive and negative sense.

The synsets for “hit” were:

```
[Synset('hit.n.01'),  
Synset('hit.n.02'),  
Synset('hit.n.03'),  
Synset('collision.n.01'),  
Synset('hit.n.05'),  
Synset('hit.n.06'),  
Synset('hit.n.07'),  
Synset('hit.v.01'),  
Synset('hit.v.02'),  
Synset('hit.v.03'),  
Synset('reach.v.01'),  
Synset('hit.v.05'),  
Synset('shoot.v.01'),  
Synset('stumble.v.03'),  
Synset('score.v.01'),  
Synset('hit.v.09'),  
Synset('strike.v.04'),  
Synset('murder.v.01'),  
Synset('hit.v.12'),  
Synset('reach.v.02'),  
Synset('strike.v.10'),  
Synset('hit.v.15'),  
Synset('hit.v.16'),  
Synset('hit.v.17')]
```

The available lemmas were:

```
Synset('hit.n.01') : ['hit']  
Synset('hit.n.02') : ['hit', 'hitting', 'striking']  
Synset('hit.n.03') : ['hit', 'smash', 'smasher', 'strike', 'bang']  
Synset('collision.n.01') : ['collision', 'hit']  
Synset('hit.n.05') : ['hit']  
Synset('hit.n.06') : ['hit']  
Synset('hit.n.07') : ['hit']  
Synset('hit.v.01') : ['hit']  
Synset('hit.v.02') : ['hit', 'strike', 'impinge_on', 'run_into', 'collide_with']  
Synset('hit.v.03') : ['hit']  
Synset('reach.v.01') : ['reach', 'make', 'attain', 'hit', 'arrive_at', 'gain']  
Synset('hit.v.05') : ['hit', 'strike']  
Synset('shoot.v.01') : ['shoot', 'hit', 'pip']  
Synset('stumble.v.03') : ['stumble', 'hit']  
Synset('score.v.01') : ['score', 'hit', 'tally', 'rack_up']
```

```
Synset('hit.v.09') : ['hit', 'strike', 'come_to']
Synset('strike.v.04') : ['strike', 'hit']
Synset('murder.v.01') : ['murder', 'slay', 'hit', 'dispatch', 'bump_off', 'off',
    'polish_off', 'remove']
Synset('hit.v.12') : ['hit', 'strike']
Synset('reach.v.02') : ['reach', 'hit', 'attain']
Synset('strike.v.10') : ['strike', 'hit']
Synset('hit.v.15') : ['hit']
Synset('hit.v.16') : ['hit']
Synset('hit.v.17') : ['hit']
```

The definitions for the list of synsets were:

```
Synset('hit.n.01') : (baseball) a successful stroke in an athletic contest (espe
cially in baseball)
Synset('hit.n.02') : the act of contacting one thing with another
Synset('hit.n.03') : a conspicuous success
Synset('collision.n.01') : (physics) a brief event in which two or more bodies c
ome together
Synset('hit.n.05') : a dose of a narcotic drug
Synset('hit.n.06') : a murder carried out by an underworld syndicate
Synset('hit.n.07') : a connection made via the internet to another website
Synset('hit.v.01') : cause to move by striking
Synset('hit.v.02') : hit against; come into sudden contact with
Synset('hit.v.03') : deal a blow to, either with the hand or with an instrument
Synset('reach.v.01') : reach a destination, either real or abstract
Synset('hit.v.05') : affect or afflict suddenly, usually adversely
Synset('shoot.v.01') : hit with a missile from a weapon
Synset('stumble.v.03') : encounter by chance
Synset('score.v.01') : gain points in a game
Synset('hit.v.09') : cause to experience suddenly
Synset('strike.v.04') : make a strategic, offensive, assault against an enemy, o
pponent, or a target
Synset('murder.v.01') : kill intentionally and with premeditation
Synset('hit.v.12') : drive something violently into a location
Synset('reach.v.02') : reach a point in time, or a certain state or level
Synset('strike.v.10') : produce by manipulating keys or strings of musical instr
uments, also metaphorically
Synset('hit.v.15') : consume to excess
Synset('hit.v.16') : hit the intended target or goal
Synset('hit.v.17') : pay unsolicited and usually unwanted sexual attention to
```

The examples were:

```
Synset('hit.n.01') : ["he came all the way around on Williams' hit"]
Synset('hit.n.02') : ['repeated hitting raised a large bruise', 'after three mis
ses she finally got a hit']
Synset('hit.n.03') : ['that song was his first hit and marked the beginning of h
is career', 'that new Broadway show is a real smasher', 'the party went with a ba
ng']
Synset('collision.n.01') : ['the collision of the particles resulted in an excha
nge of energy and a change of direction']
Synset('hit.n.05') : []
Synset('hit.n.06') : ['it has all the earmarks of a Mafia hit']
Synset('hit.n.07') : ['WordNet gets many hits from users worldwide']
Synset('hit.v.01') : ['hit a ball']
Synset('hit.v.02') : ['The car hit a tree', 'He struck the table with his elbow
']
```

```
Synset('hit.v.03') : ['He hit her hard in the face']
Synset('reach.v.01') : ['We hit Detroit by noon', 'The water reached the doorstep', 'We barely made it to the finish line', 'I have to hit the MAC machine before the weekend starts']
Synset('hit.v.05') : ['We were hit by really bad weather', 'He was stricken with cancer when he was still a teenager', 'The earthquake struck at midnight']
Synset('shoot.v.01') : []
Synset('stumble.v.03') : ['I stumbled across a long-lost cousin last night in a restaurant']
Synset('score.v.01') : ['The home team scored many times', 'He hit a home run', 'He hit .300 in the past season']
Synset('hit.v.09') : ['Panic struck me', 'An interesting idea hit her', 'A thought came to me', 'The thought struck terror in our minds', 'They were struck with fear']
Synset('strike.v.04') : ['The Germans struck Poland on Sept. 1, 1939', 'We must strike the enemy's oil fields', 'in the fifth inning, the Giants struck, sending three runners home to win the game 5 to 2']
Synset('murder.v.01') : ['The mafia boss ordered his enemies murdered']
Synset('hit.v.12') : ['he hit his fist on the table', 'she struck her head on the low ceiling']
Synset('reach.v.02') : ['The thermometer hit 100 degrees', 'This car can reach a speed of 140 miles per hour']
Synset('strike.v.10') : ['The pianist strikes a middle C', 'strike `z` on the keyboard', 'her comments struck a sour note']
Synset('hit.v.15') : ['hit the bottle']
Synset('hit.v.16') : []
Synset('hit.v.17') : ['He tries to hit on women in bars']
```

The hypernym for

- a) Synset('hit.n.02') : ['hit', 'hitting', 'striking']
[Synset('touch.n.05')]
- b) Synset('murder.v.01') : kill intentionally and with premeditation
[Synset('kill.v.01')]

The hypernym paths for

- a) Synset('hit.n.02') : ['hit', 'hitting', 'striking']
[[Synset('entity.n.01'),
Synset('abstraction.n.06'),
Synset('psychological_feature.n.01'),
Synset('event.n.01'),
Synset('act.n.02'),
Synset('touch.n.05'),
Synset('hit.n.02')]]
- b) Synset('murder.v.01') : kill intentionally and with premeditation
[[Synset('kill.v.01'), Synset('murder.v.01')]]

The positive and negative sentiment scores for the synsets are:

```
hit1 = swn.senti_synset('touch.n.05')  
print(hit1.pos_score())  
print(hit1.neg_score())  
print(hit1.obj_score())
```

```
0.0  
0.0  
1.0
```

```
hit2 = swn.senti_synset('murder.v.01')  
print(hit2.pos_score())  
print(hit2.neg_score())  
print(hit2.obj_score())
```

```
0.0  
0.625  
0.375
```

Observations :

On playing around with different words, I found that the synsets for each of them matched the online wordnet search. There were synsets which had objective scores and despite being negative, they had a negative sentiment score of 0, this surprised me I assumed that the wordnet did not cover all possible cases of the word synset. A clear example of this can be seen above, collision hit didn't have a negative sense, but murder did(Which is a synset of hit), if we were to just take the hit.n.01 synset, the positive and negative scores were 0 as well. I couldn't justify why, but I assumed that it could be because of the limitations in how the wordnet is formed and there could be limited number of word that are considered negative and this could be the reason why the scores are not 100% accurate according to me.