# Natural Language Processing with Python & nltk Cheat Sheet by murenei

A quick reference guide for basic (and more advanced) natural language processing tasks in Python, using mostly nltk (the Natural Language Toolkit package), including POS tagging, lemmatizing, sentence parsing and text classification.

## Handling Text

| | |
|---|---|
| `text='Some words'` | assign string |
| `list(text)` | Split text into character tokens |
| `set(text)` | Unique tokens |
| `len(text)` | Number of characters |

## Accessing corpora and lexical resources

| | |
|---|---|
| `from nltk.corpus import brown` | import CorpusReader object |
| `brown.words(text_id)` | Returns pretokenised document as list of words |
| `brown.fileids()` | Lists docs in Brown corpus |
| `brown.categories()` | Lists categories in Brown corpus |

## Tokenization

| | |
|---|---|
| `text.split(" ")` | Split by space |
| `nltk.word_tokenizer(text)` | nltk in-built word tokenizer |
| `nltk.sent_tokenize(doc)` | nltk in-built sentence tokenizer |

## Sentence Parsing

| | |
|---|---|
| `g=nltk.data.load('grammar.cfg')` | Load a grammar from a file |
| `g=nltk.CFG.fromstring("""...""")` | Manually define grammar |
| `parser=nltk.ChartParser(g)` | Create a parser out of the grammar |
| `trees=parser.parse_all(text)` | |
| `for tree in trees: ... print tree` | |
| `from nltk.corpus import treebank` | |
| `treebank.parsed_sents('wsj_0001.mrg')` | Treebank parsed sentences |

## Text Classification

`from sklearn.feature_extraction.text import CountVectorizer, TfidfVectorizer`

| | |
|---|---|
| `vect=CountVectorizer().fit(X_train)` | Fit bag of words model to data |
| `vect.get_feature_names()` | Get features |
| `vect.transform(X_train)` | Convert to doc-term matrix |

| | |
|---|---|
| input="List listed lists listing listings" | Different suffixes |
| words=input.lower().split(' ') | Normalize (lower-case) words |
| porter=nltk.PorterStemmer | Initialise Stemmer |
| [porter.stem(t) for t in words] | Create list of stems |
| WNL=nltk.WordNetLemmatizer() | Initialise WordNet lemmatizer |
| [WNL.lemmatize(t) for t in words] | Use the lemmatizer |

## Part of Speech (POS) Tagging

| | |
|---|---|
| nltk.help.upenn_tagset('MD') | Lookup definition for a POS tag |
| nltk.pos_tag(words) | nltk in-built POS tagger |
| | <use an alternative tagger to illustrate ambiguity> |

| | |
|---|---|
| g="NP: {<DT>?<JJ>*<NN>}" | Regex chunk grammar |
| cp=nltk.RegexpParser(g) | Parse grammar |
| ch=cp.parse(pos_sent) | Parse tagged sent. using grammar |
| print(ch) | Show chunks |
| ch.draw() | Show chunks in IOB tree |
| cp.evaluate(test_sents) | Evaluate against test doc |

```
sents=nltk.corpus.treebank.tagged_sents()
```

| | |
|---|---|
| print(nltk.ne_chunk(sent)) | Print chunk tree |

## RegEx with Pandas & Named Groups

```
df=pd.DataFrame(time_sents, columns=['text'])
df['text'].str.split().str.len()
df['text'].str.contains('word')
df['text'].str.count(r'\d')
df['text'].str.findall(r'\d')
df['text'].str.replace(r'\w+day\b', '???')
df['text'].str.replace(r'(\w)', lambda x: x.groups()[0][:3])
df['text'].str.extract(r'(\d?\d):(\d\d)')
df['text'].str.extractall(r'((\d?\d):(\d\d) ?([ap]m))')
df['text'].str.extractall(r'(?P<digits>\d)')
```

python nltk nlp

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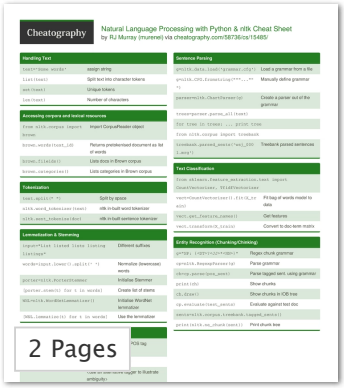


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ReSummit
23 Oct 20
physics

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