```python
nlp = spacy.load('en')
one_block = cleantweets
doc_block=nlp(one_block)
spacy.display.render(doc_block,style='ent',jupyter=True)
```

alien ray PERSON trace cyberpunk hdr nextlevel have try great interview doge underestimate congratulation tesla china GPE amazing execution last year DATE now next ever happy new year EVENT ox frodo underdoge all thought would fail -PRON- haha thank indeed tweet definitely represent realworld time allocation the entertaining outcome likely just send just agree clubhouse -PRON- get real buy dogecoin lil x toddler hodler -PRON- definitely issue sentencing seem bit high thank fix please unlock account this true power any crypto wallet give private key avoid cost -PRON- app suck rt nasa ORG select falcon ORG heavy launch first ORDINAL two CARDINAL element lunar gateway together one CARDINAL mission once predict cash flow reasonably well starlink ipo starlink staggeringly difficult technical economic endeavor however spacex need pass deep chasm negative cash flow next year DATE low cost per ton carbon sequester net value product make must scalable g -PRON- mean price country only difference taxis ship this intend earth may idea apply mars xprize PRODUCT team manage 100 CARDINAL m carbon capture prize everyone tesla ORDINAL receive stock -PRON- comp stock option take table that miss back work go do seem bit high doge appear inflationary meaningfully fix coin per unit time whereas wow 1 CARDINAL orbital launch tower stack CARDINAL enough raptor orbit booster 3 CARDINAL improve ship booster mass back work tonight TIME ð ðogecoin GPE instructional video the people speak so cute u0001f495 ORG extremely misleading image reflect true time cost people rain pain u0001f3b6 who let doge u0001f3b6 hodl rainforest so finally come -PRON- fun crypto -PRON- simplicity genius yup true not easy this two decade DATE intense work have look old note email text lesson learn of earth mars LOC time tell story tesla ORDINAL spacex have read -PRON- great the second ORDINAL last kingdom haven GPE hear name year dogecake DATE yolt NORP that damian NORP yeah sure the great thing restaurant get hang stranger sjm PERSON the future currency earth just scratch much wow u0001f5a4 ORG destiny franz essential that say ship landing burn clear solution -PRON- greate will still use hot gas maneuvering rcs thruster higher isp intuitively would seem turbopumpfe raptor mu rt falcon 9 launch spherex mission – collect datum 300 million CARDINAL galaxy explore un ORG rt falcon 9 CARDINAL launch 60 CARDINAL starlink satellite orbit – mission pad 39a CARDINAL deck -PRON- true yeah by default engine least lever arm would shut 3 CARDINAL good engine min throttle PERSON point flameout risk la -PRON- foolish -PRON- start 3 CARDINAL engine immediately shut 2 CARDINAL need land become meme destroyer short may actually happen sandstorm masterpiece -PRON- dumb next time try pull method lowkey loki no high low doge no need gigachad dogecoin people crypto ur welcome the entertaining outcome likely doge high sea wind this tough one rt watch falcon 9 CARDINAL launch 60 CARDINAL starlink satellite u2192 off twitter -PRON- fill graffiti GPE art u043c u044b u0441 DATE u0434 u0435 ORG u043b u0430 u0435 ORG u043c giga berlin GPE progress neuralink work super hard ensure implant safety close communication rt this mission enable access everyday people dream go space rt announce first ORDINAL commercial astronaut mission orbit earth aboard dragon u2192 if work advanced wearable phone robot skill need feel weird helping make hopefully good version cyberpunk come true please consider work neuralink shortterm solve brain spine injury longterm human ai symbiosis latte on clubhouse tonight 10 p.m. TIME la time tom great PERSON story experim rt

```python
for token in doc_block[100:200]:
    print(token,token.pos_)
```

```
predict VERB
cash NOUN
flow NOUN
reasonably ADV
well ADV
starlink PROPN
ipo PROPN
starlink VERB
staggeringly ADV
difficult ADJ
technical PROPN
economic ADJ
endeavor NOUN
however ADV
spacex PROPN
need VERB
pass VERB
deep ADJ
chasm NOUN
negative ADJ
cash NOUN
flow NOUN
next ADJ
year NOUN
low ADJ
cost NOUN
per ADP
ton NOUN
carbon NOUN
sequester NOUN
net ADJ
value NOUN
```
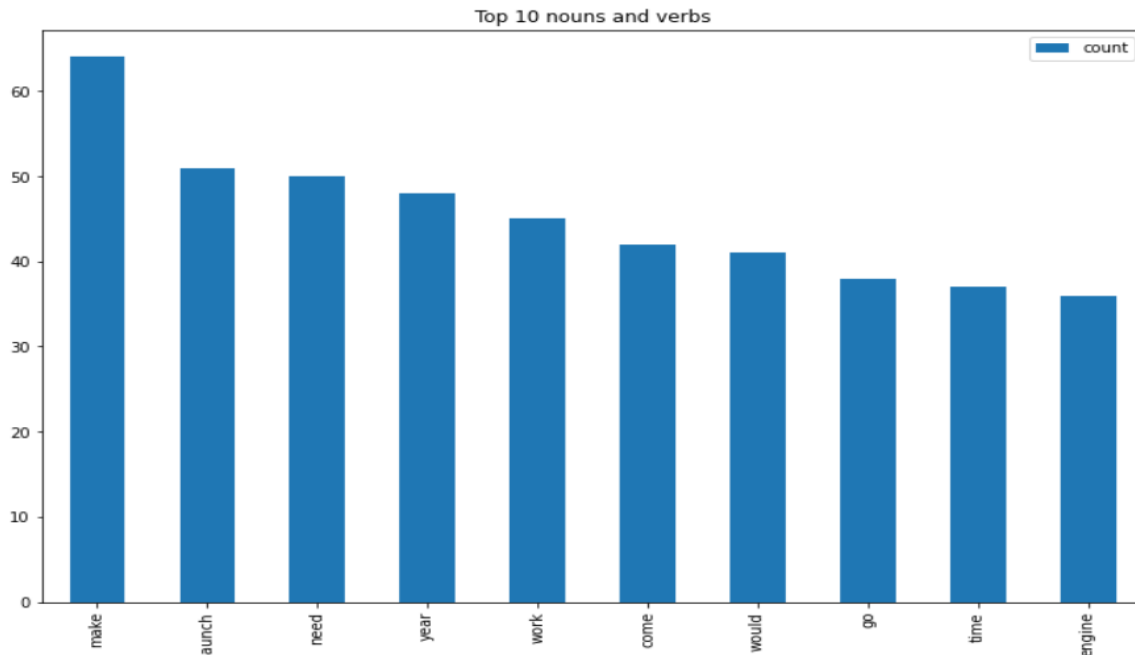
```
nounverbs = [token.text for token in doc_block if token.pos_ in ('NOUN','VERB')]
print(nounverbs[100:200])
```

['ship', 'booster', 'work', 'tonight', 'video', 'people', 'speak', 'image', 'reflect', 'time', 'cost', 'people', 'rain', 'pain', 'let', 'doge', 'crypto', 'simplicity', 'genius', 'decade', 'work', 'look', 'note', 'email', 'text', 'lesson', 'learn', 'earth', 'time', 'tell', 'story', 'space d', 'kingdom', 'year', 'thing', 'restaurant', 'get', 'hang', 'currency', 'earth', 'scratch', 'destiny', 'say', 'ship', 'landing', 'burn', 'solut reate', 'will', 'use', 'gas', 'maneuvering', 'would', 'seem', 'turbopumpfe', 'raptor', 'launch', 'spherex', 'collect', 'explore', 'launch', 'sta 'satellite', 'orbit', 'mission', 'pad', 'deck', 'default', 'engine', 'lever', 'arm', 'would', 'shut', 'engine', 'min', 'point', 'risk', '-PRON-' t', 'engine', 'shut', 'need', 'land', 'become', 'destroyer', 'may', 'happen', 'sandstorm', 'masterpiece', 'time', 'try', 'pull', 'loki', 'doge', 'people', 'welcome', 'outcome']

```
cv = CountVectorizer()
x = cv.fit_transform(nounverbs)
sumwords = x.sum(axis=0)
wordfreq = [(word.sumwords[0,idx]) for word, idx in cv.vocabulary_.items()]
wordfreq = sorted(wordfreq, key=lambda [x]:x[1],reverse=True)
wddf = pd.DataFrame(wordfreq)
wddf.columns=['word','count']
wddf[0:10]
```

	word	count
0	make	64
1	launch	51
2	need	50
3	year	48
4	work	45
5	come	42
6	would	41
7	go	38
8	time	37

```
wddf[0:10].plot.bar(x='word',figsize=(12,8),title='Top 10 nouns and verbs')
```

Top 10 nouns and verbs

Bar chart showing counts for: make (~64), launch (~51), need (~50), year (~48), work (~45), come (~42), would (~41), go (~38), time (~37), engine (~36)

```
sentences = tokenize.sent_tokenize(''.join(reviews))
sentences
```

```
[ @kunalb11 I\x92m an alien @ID_AA_Carmack Ray tracing on Cyberpunk with HDR is next-level. ',
 'Have you tried it?',
 '@joerogan @Spotify Great interview!',
 '@gtera27 Doge is underestimated @teslacn Congratulations Tesla China for amazing execution last year.',
 'Now on to the next for even more!!',
 'Happy New Year of the Ox!',
 'https://t.co/9WFKMYu2oj Frodo was the underdoge,\nAll thought he would fail,\nHimself most of all.',
 'https://t.co/zGxJFDzzrM @OwenSparks_ @flcnhvy @anonyx10 Haha thanks :) @flcnhvy @anonyx10 Indeed!',
 'Tweets definitely do not represent real-world time allocation.',
 'The most entertaining outcome is the most likely @GiveDirectly Just sent some Just agree to do Clubhouse with @kanyewest https://t.co/3rWE9uHSTS @
fkeighley @UnrealEngine It\x92s getting real Bought some Dogecoin for lil X, so he can be a toddler hodler @JoshManMode He definitely has issues, bu
e sentencing seems a bit high @freewalletorg Thanks for fixing @freewalletorg Please unlock my account @AstroJordy <U+0001F923><U+0001F923> This is
power haha https://t.co/Fc9uhQSd70 @freewalletorg Any crypto wallet that won\x92t give you your private keys should be avoided at all costs @freewal
rg Your app sucks RT @SpaceX: NASA has selected Falcon Heavy to launch the first two elements of the lunar Gateway together on one mission!',
 'https://t.co/3pWt @ajtourville Yes @BLKMDL3 @RationalEtienne @Adamklotz_ Once we can predict cash flow reasonably well, Starlink will IPO @Rationa
enne @Adamklotz_ Starlink is a staggeringly difficult technical &amp; economic endeavor.',
 'However, if we don\x85 https://t.co/9Z8Ac6skqx @RationalEtienne @Adamklotz_ SpaceX needs to pass through a deep chasm of negative cash flow over t
ext year or\x85 https://t.co/7J1c92hdjl @ID_AA_Carmack Lowest cost per ton of carbon sequestered, net of value of any product made.',
 'Must be scalable to g\x85 https://t.co/XMyI7qWSgw @Adamklotz_ It\x92s meant to be the same price in all countries.',
 'Only difference should be taxes &amp; shipping.',
 '@tobyliiiiiiiiii This is intended for Earth, but there may be some ideas that apply to Mars too @CryptoShrikar @CoinDesk @Tesla @Dan_Z_Palmer <U+0
923><U+0001F923> XPrize team will manage the $100M carbon capture prize https://t.co/fSw5IanL0r @SRuhle Everyone at Tesla receives stock.',
 'My comp is all stock/options, which I do not take off the table.',
 'That\x92s what you\x92re missing.',
 'Back to work I go @CapybaraSurfer @MattWallace888 Does seem a bit high @itsALLrisky Doge appears to be inflationary, but is not meaningfully so (f
# of coins per unit time), whereas\x85 https://t.co/4UH4rARC6T @MichaelGalanin @kevinmgill Wow @Erdayastronaut @michaelhodapp_ 1.',
 'Orbital launch tower that can stack\n2. '
```

```
sentdf = pd.DataFrame(sentences,columns=['sentences'])
sentdf
```

0	@kunalb11 I'm an alien @ID_AA_Carmack Ray trac...
1	Have you tried it?
2	@joerogan @Spotify Great interview!
3	@gtera27 Doge is underestimated @teslacn Congr...
4	Now on to the next for even more!!
...	...
919	@kenyanwalstreet Not actually a payout, just a...
920	It may never pay out, as the stock can't b... ht...
921	Details Aug 28.
922	AI symbiosis while u wait @vistacruiser7 @flcn...
923	@TeslaGong @PPathole Samwise Gamgee @PPathole ...

```
affin = pd.read_csv('Downloads/Afinn.csv')
affin
```

	word	value
0	abandon	-2
1	abandoned	-2
2	abandons	-2
3	abducted	-2
4	abduction	-2
...	...	...
2472	yucky	-2
2473	yummy	3

```
affinityscores = affin.set_index('word')['value'].to_dict()
affinityscores
```

```
]:  {'abandon': -2,
     'abandoned': -2,
     'abandons': -2,
     'abducted': -2,
     'abduction': -2,
     'abductions': -2,
     'abhor': -3,
     'abhorred': -3,
     'abhorrent': -3,
     'abhors': -3,
     'abilities': 2,
     'ability': 2,
     'aboard': 1,
     'absentee': -1,
     'absentees': -1,
     'absolve': 2,
     'absolved': 2,
     'absolves': 2,
     'absolving': 2,
     'absorbed': 1,
     'abuse': -3,
     'abused': -3,
     'abuses': -3,
     'abusive': -3,
     'accept': 1,
     'accepted': 1,
     'accepting': 1,
     'accepts': 1,
     'accident': -2,
     'accidental': -2,
```

```python
sentimentlexicon = affinityscores
def calculate_sentiment(text:str=None):
    sentscore=0
    if text:
        sentence = nlp(text)
        for word in sentence:
            sentscore+= sentimentlexicon.get(word.lemma_.0)
            return sentscore
calculate_sentiment(text='great')
```
3

```python
sentdf['sentiment_value']=sentdf['sentence'].apply(calculate_sentiment)
sentdf['sentiment_value']
```
```
0      0
1      0
2      3
3      3
4      0
       ..
919    0
920   -4
921    0
922   -2
923   -1
Name: sentiment_value, Length: 924, dtype: int64
```

```python
sentdf['word_count']=sentdf['sentence'].str.split().apply(len)
sentdf['word_count']
```
```
0      13
1       4
2       4
3      13
4       8
       ..
919    11
920    31
921     3
922    47
923    15
Name: word_count, Length: 924, dtype: int64
```

```python
sentdf.sort_values(by='sentiment_value')
```

	sentence	sentiment_value	word_count
647	Very ba... https://t.co/tJsh1Exz1Q @justpaulinel...	-8	60
64	Also, the road to hell is mostly paved with ba...	-7	11
837	Cool Model 3 review by @iamjamiefoxx https://t...	-6	61
611	Then static fire, checkouts, static fire, fly ...	-4	12

sentdf['sentiment_value'].describe()

```
count    924.000000
mean       1.449134
std        2.739030
min       -8.000000
25%        0.000000
50%        0.000000
75%        3.000000
max       16.000000
Name: sentiment_value, dtype: float64
```

sentdf[sentdf['sentiment_value']<=0]

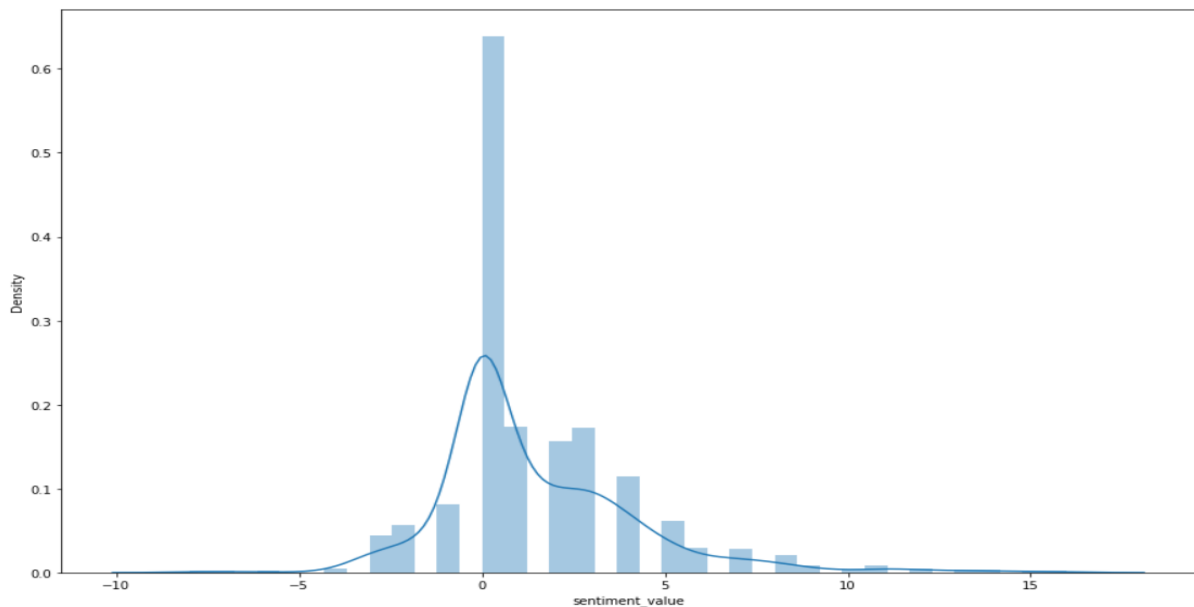|	sentence	sentiment_value	word_count
0	@kunalb11 I'm an alien @ID_AA_Carmack Ray trac...	0	13
1	Have you tried it?	0	4
4	Now on to the next for even more!!	0	8
5	Happy New Year of the Ox!	0	6
6	https://t.co/9WFKMYu2oj Frodo was the underdog...	-2	14
...	...	...	...
919	@kenyanwalstreet Not actually a payout, just a...	0	11
920	It may never pay out, as the stock can't b... ht...	-4	31
921	Details Aug 28.	0	3
922	AI symbiosis while u wait @vistacruiser7 @flcn...	-2	47
923	@TeslaGong @PPathole Samwise Gamgee @PPathole ...	-1	15

sentdf[sentdf['sentiment_value']>0]

	sentence	sentiment_value	word_count
2	@joerogan @Spotify Great interview!	3	4
3	@gtera27 Doge is underestimated @teslacn Congr...	3	13
7	https://t.co/zGxJFDzzrM @OwenSparks_ @flcnhvy ...	2	10
9	The most entertaining outcome is the most like...	3	109
17	Back to work I go @CapybaraSurfer @MattWallace...	4	38
...	...	...	...
911	He was one of the very best.	3	7
913	@Ali_Afshari In general, we need to improve ho...	2	87
915	@burakaydik True Wow, IHOP & GitHub are cl...	7	15
917	This is both great & terrifying.	3	6
918	Everything we've ever sensed or thought has be...	2	17

```
sentdf['index']=range(0,len(sentdf))
sentdf
```

	sentence	sentiment_value	word_count	index
0	@kunalb11 I'm an alien @ID_AA_Carmack Ray trac...	0	13	0
1	Have you tried it?	0	4	1
2	@joerogan @Spotify Great interview!	3	4	2
3	@gtera27 Doge is underestimated @teslacn Congr...	3	13	3
4	Now on to the next for even more!!	0	8	4
...	...	...	...	...

```
sns.distplot(sentdf['sentiment_value'])
plt.figure(figsize=(16,8))
```

```
sns.lineplot(y='sentiment_value',x='index',data=sentdf)
plt.figure(figsize=(16,8))
```