
Under The Sea Documentation

Release 1.1.9

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1	Underthesea - Vietnamese NLP Toolkit	3
2	AUTHORS	9
3	History	11
4	word_tokenize	15
5	pos_tag	17
6	chunking	19
7	ner	21
8	classify	23
9	sentiment	25
10	Indices and tables	27

Vietnamese NLP Toolkit

Underthesea - Vietnamese NLP Toolkit



underthesea is a suite of open source Python modules, data sets and tutorials supporting research and development in Vietnamese Natural Language Processing.

Version 1.3.0 out now! [Underthesea meet deep learning!](#)

Free software	GNU General Public License v3
Live demo	undertheseanlp.com
Colab notebooks	latest / stable
Documentation	Underthesea Documentation
Facebook	Underthesea Page
Youtube	Underthesea NLP Channel

1.1 Installation

To install underthesea, simply:

```
$ pip install underthesea
```

Satisfaction, guaranteed.

1.2 Usage

- 1. Sentence Segmentation
- 2. Word Segmentation
- 3. POS Tagging
- 4. Chunking
- 5. Dependency Parsing
- 6. Named Entity Recognition
- 7. Text Classification
- 8. Sentiment Analysis
- 9. Vietnamese NLP Resources

1.2.1 1. Sentence Segmentation

Usage

```
>>> # -*- coding: utf-8 -*-
>>> from underthesea import sent_tokenize
>>> text = 'Taylor cho bit lúc đầu cô em thấy ngại vì cô bạn thân Amanda nhng ri mi th_
↳trôi qua nhanh chóng. Amanda cũng thôi mái vì mi quan h này.'

>>> sent_tokenize(text)
[
    "Taylor cho bit lúc đầu cô em thấy ngại vì cô bạn thân Amanda nhng ri mi th trôi qua_
↳nhanh chóng.",
    "Amanda cũng thôi mái vì mi quan h này."
]
```

1.2.2 2. Word Segmentation

Usage

```
>>> # -*- coding: utf-8 -*-
>>> from underthesea import word_tokenize
>>> sentence = 'Chàng trai 9X Qung Tr khi nghip t nm sò'

>>> word_tokenize(sentence)
['Chàng trai', '9X', 'Qung Tr', 'khi nghip', 't', 'nm', 'sò']

>>> word_tokenize(sentence, format="text")
'Chàng_trai 9X Qung_Tr khi_nghip t nm sò'
```

1.2.3 3. POS Tagging

Usage

```
>>> # -*- coding: utf-8 -*-
>>> from underthesea import pos_tag
>>> pos_tag('Ch tht chó ni ting Sài Gòn b truy quét')
[('Ch', 'N'),
 ('tht', 'N'),
 ('chó', 'N'),
 ('ni ting', 'A'),
 ('', 'E'),
 ('Sài Gòn', 'Np'),
 ('b', 'V'),
 ('truy quét', 'V')]
```

1.2.4 4. Chunking

Usage

```
>>> # -*- coding: utf-8 -*-
>>> from underthesea import chunk
>>> text = 'Bác sĩ bây gi có th thn nhiên báo tin bnh nhân b ung th?'
>>> chunk(text)
[('Bác sĩ', 'N', 'B-NP'),
 ('bây gi', 'P', 'I-NP'),
 ('có th', 'R', 'B-VP'),
 ('thn nhiên', 'V', 'I-VP'),
 ('báo tin', 'N', 'B-NP'),
 ('bnh nhân', 'N', 'I-NP'),
 ('b', 'V', 'B-VP'),
 ('ung th', 'N', 'I-VP'),
 ('?', 'CH', 'O')]
```

1.2.5 5. Dependency Parsing

Usage

```
>>> # -*- coding: utf-8 -*-
>>> from underthesea import dependency_parse
>>> text = 'Ti 29/11, Vit Nam thêm 2 ca mc Covid-19'
>>> dependency_parse(text)
[('Ti', 5, 'obl:tmod'),
 ('29/11', 1, 'flat:date'),
 (',', 1, 'punct'),
 ('Vit Nam', 5, 'nsubj'),
 ('thêm', 0, 'root'),
 ('2', 7, 'nummod'),
 ('ca', 5, 'obj'),
 ('mc', 7, 'nmod'),
 ('Covid-19', 8, 'nummod')]
```

1.2.6 6. Named Entity Recognition

Usage

```
>>> # -*- coding: utf-8 -*-
>>> from underthesea import ner
>>> text = 'Cha tit l lch trình ti Vit Nam ca Tng thng M Donald Trump'
>>> ner(text)
[('Cha', 'R', 'O', 'O'),
 ('tit l', 'V', 'B-VP', 'O'),
 ('lch trình', 'V', 'B-VP', 'O'),
 ('ti', 'E', 'B-PP', 'O'),
 ('Vit Nam', 'Np', 'B-NP', 'B-LOC'),
 ('ca', 'E', 'B-PP', 'O'),
 ('Tng thng', 'N', 'B-NP', 'O'),
 ('M', 'Np', 'B-NP', 'B-LOC'),
 ('Donald', 'Np', 'B-NP', 'B-PER'),
 ('Trump', 'Np', 'B-NP', 'I-PER')]
```

1.2.7 7. Text Classification

Download models

```
$ underthesea download-model TC_GENERAL
$ underthesea download-model TC_BANK
```

Usage

```
>>> # -*- coding: utf-8 -*-
>>> from underthesea import classify

>>> classify('HLV đầu tiên Premier League b sa thi sau 4 vòng đầu')
['The thao']
>>> classify('Hi đng t vn kinh doanh Asean vinh danh giı thng quc t')
['Kinh doanh']

>> classify('Lãi suất t BIDV rt u đãi', domain='bank')
['INTEREST_RATE']
```

1.2.8 8. Sentiment Analysis

Download models

```
$ underthesea download-model SA_GENERAL
$ underthesea download-model SA_BANK
```

Usage

```
>>> # -*- coding: utf-8 -*-
>>> from underthesea import sentiment

>>> sentiment('hàng kém cht lg,chấn đp lên dính lông lá khp ngi. tht vng')
negative
>>> sentiment('Sn phm hi nh so vi tng tng nhng cht lng tt, đóng gói cn thn.')
positive

>>> sentiment('Đky qua đng link bài vit này t th 6 mà gi cha thy ai lhe ht', domain=
↳ 'bank')
['CUSTOMER_SUPPORT#negative']
>>> sentiment('Xem li vn thy xúc đng và t hào v BIDV ca mình', domain='bank')
['TRADEMARK#positive']
```

1.2.9 9. Vietnamese NLP Resources

List resources

```
$ underthesea list-data
| Name          | Type          | License  | Year  | Directory          |
|-----+-----+-----+-----+-----+
| UTS2017-BANK  | Categorized   | Open     | 2017  | datasets/UTS2017-BANK |
| VNESES        | Plaintext     | Open     | 2012  | datasets/LTA          |
| VNTQ_BIG      | Plaintext     | Open     | 2012  | datasets/LTA          |
| VNTQ_SMALL    | Plaintext     | Open     | 2012  | datasets/LTA          |
| VNTC          | Categorized   | Open     | 2007  | datasets/VNTC         |

$ underthesea list-data --all
```

Download resources

```
$ underthesea download-data VNTC
100%|| 74846806/74846806 [00:09<00:00, 8243779.16B/s]
Resource VNTC is downloaded in ~/.underthesea/datasets/VNTC folder
```

1.3 Up Coming Features

- Machine Translation
- Text to Speech
- Automatic Speech Recognition

1.4 Contributing

Do you want to contribute with underthesea development? Great! Please read more details at [CONTRIBUTING.rst](#).

2.1 Original Authors

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2.3 Thanks

Thanks to all the wonderful folks who have contributed to schedule over the years

- Nhu Bao Vu <nhubaovu@gmail.com>
- Hoai-Thu Vuong <thuvh87@gmail.com>

3.1 1.3.4-alpha.1 (2021-11-18)

- Demo chatbot with rasa (513)
- Lite version of underthesea (GH-505)
- Increase word_tokenize speed 1.5 times (GH-185)
- Add build for windows (GH-185)

3.2 1.3.3 (2021-09-02)

- Update torch and transformer dependency (GH-403)

3.3 1.3.2 (2021-08-04)

- Publish two ABSA open datasets (GH-417)
- Migrate from travis-ci to github actions (GH-410)
- Update ParserTrainer (GH-392)
- Add pipeline folder (GH-351)

3.4 1.3.1 (2021-01-11)

- Compatible with newer version of scikit-learn (GH-313)
- Retrain classification and sentiment models with latest version of scikit-learn (GH-381)

- Add ClassifierTrainer (from languageflow) (GH-381)
- Add 3 new datasets (GH-351)
- [Funny Update] Change underthesea's avatar (GH-371)
- [CI] Add Stale App: Automatically close stale Issues and Pull Requests that tend to accumulate during a project (GH-351)

3.5 1.3.0 (2020-12-11)

- Remove languageflow dependency (GH-364)
- Remove tabulate dependency (GH-364)
- Remove scores in text classification and sentiment section (GH-351)
- Add information of dependency_parse module in info function (GH-351)
- Try to use Github Actions (GH-353)
- Dependency Parsing (GH-157)

3.6 1.2.3 (2020-11-28)

- Refactor config for resources (GH-300)
- Thêm API x lý d liu (GH-299)

3.7 1.2.2 (2020-11-04)

- Remove nltk strict version (GH-308)
- Add word_hyphen rule (GH-290)
- Sanity check python version (GH-320)
- Handle exception case in sentiment module (GH-321)
- Cp nh t qun lý resources t languageflow (GH-295)
- Loi b languageflow trong quá trình cài đ t (GH-295)
- Cp nh t phiên bn fasttext (GH-304)

3.8 1.1.16 (2019-06-15)

- Bumping up version of the languageflow dependency (GH-231)
- Update phiên bn scikit-learn 0.20.2 (GH-229)
- Cp nh t li các dependencies (GH-241)
- Cp nh t mô hình trên b d liu VNTC (GH-246)
- Cp nh t mô hình trên b d liu UTS2017_BANK_TC (GH-243)

- Cập nhật mô hình trên bộ dữ liệu UTS2017_BANK_SA (GH-244)
- Li vi các câu sentiment demo (GH-236)
- Thng nh cách đt tên và qun lý model (GH-225)

3.9 1.1.12 (2019-03-13)

- Add sentence segmentation feature

3.10 1.1.9 (2019-01-01)

- Improve speed of word_tokenize function
- Only support python 3.6+
- Use flake8 for style guide enforcement

3.11 1.1.8 (2018-06-20)

- Fix word_tokenize error when text contains tab (t) character
- Fix regex_tokenize with url

3.12 1.1.7 (2018-04-12)

- Rename word_sent function to word_tokenize
- Refactor version control in setup.py file and __init__.py file
- Update documentation badge url

3.13 1.1.6 (2017-12-26)

- New feature: aspect sentiment analysis
- Integrate with languageflow 1.1.6
- Fix bug tokenize string with '=' (#159)

3.14 1.1.5 (2017-10-12)

- New feature: named entity recognition
- Refactor and update model for word_sent, pos_tag, chunking

3.15 1.1.4 (2017-09-12)

- New feature: text classification
- [bug] Fix Text error
- [doc] Add facebook link

3.16 1.1.3 (2017-08-30)

- Add live demo: <https://underthesea.herokuapp.com/>

3.17 1.1.2 (2017-08-22)

- Add dictionary

3.18 1.1.1 (2017-07-05)

- Support Python 3
- Refactor feature_engineering code

3.19 1.1.0 (2017-05-30)

- Add chunking feature
- Add pos_tag feature
- Add word_sent feature, fix performance
- Add Corpus class
- Add Transformer classes
- Integrated with dictionary of Ho Ngoc Duc
- Add travis-CI, auto build with PyPI

3.20 1.0.0 (2017-03-01)

- First release on PyPI.
- First release on Readthedocs

CHAPTER 4

word_tokenize

CHAPTER 5

pos_tag

CHAPTER 6

chunking

CHAPTER 7

ner

CHAPTER 8

classify

Install dependencies and download default model

```
$ pip install Cython
$ pip install future scipy numpy scikit-learn
$ pip install -U fasttext --no-cache-dir --no-deps --force-reinstall
$ underthesea data
```


CHAPTER 9

sentiment

Install dependencies

```
$ pip install future scipy numpy scikit-learn==0.19.2 joblib
```


CHAPTER 10

Indices and tables

- `genindex`
- `modindex`
- `search`