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# **textract Documentation**

*Release 1.6.1*

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As undesirable as it might be, more often than not there is extremely useful information embedded in Word documents, PowerPoint presentations, PDFs, etc—so-called “dark data”—that would be valuable for further textual analysis and visualization. While *several packages* exist for extracting content from each of these formats on their own, this package provides a single interface for extracting content from any type of file, without any irrelevant markup.

This package provides two primary facilities for doing this, the *command line interface*

```
textract path/to/file.extension
```

or the *python package*

```
# some python file
import textract
text = textract.process("path/to/file.extension")
```



# CHAPTER 1

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## Currently supporting

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textextract supports a growing list of file types for text extraction. If you don't see your favorite file type here, Please recommend other file types by either mentioning them on the [issue tracker](#) or by *contributing a pull request*.

- `.csv` via python builtins
- `.doc` via `antiword`
- `.docx` via `python-docx2txt`
- `.eml` via python builtins
- `.epub` via `ebooklib`
- `.gif` via `tesseract-ocr`
- `.jpg` and `.jpeg` via `tesseract-ocr`
- `.json` via python builtins
- `.html` and `.htm` via `beautifulsoup4`
- `.mp3` via `sox`, `SpeechRecognition`, and `pocketsphinx`
- `.msg` via `msg-extractor`
- `.odt` via python builtins
- `.ogg` via `sox`, `SpeechRecognition`, and `pocketsphinx`
- `.pdf` via `pdftotext` (default) or `pdfminer.six`
- `.png` via `tesseract-ocr`
- `.pptx` via `python-pptx`
- `.ps` via `ps2text`
- `.rtf` via `unrtf`
- `.tiff` and `.tif` via `tesseract-ocr`
- `.txt` via python builtins

- `.wav` via `SpeechRecognition` and `pocketsphinx`
- `.xlsx` via `xldr`
- `.xls` via `xldr`



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### Related projects

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Of course, `textract` isn't the first project with the aim to provide a simple interface for extracting text from any document. But this is, to the best of my knowledge, the only project that is written in python (a language commonly chosen by the natural language processing community) and is *method agnostic about how content is extracted*. I'm sure that there are other similar projects out there, but here is a small sample of similar projects:

- `Apache Tika` has very similar, if not identical, aims as `textract` and has impressive coverage of a wide range of file formats. It is written in java.
- `textract (node.js)` has similar aims as this `textract` package (including an identical name! great minds...). It is written in node.js.
- `pandoc` is intended to be a document conversion tool (a much more difficult task!), but it does have the ability to convert to plain text. It is written in Haskell.

Contents:

### Command line interface

#### `textract`

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**Note:** To make the command line interface as usable as possible, autocompletion of available options with `textract` is enabled by @kislyuk's amazing `argcomplete` package. Follow instructions to enable global `autocomplete` and you should be all set. As an example, this is also configured in the `virtual machine provisioning for this project`.

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### Python package

This package is organized to make it as easy as possible to add new extensions and support the continued growth and coverage of `textract`. For almost all applications, you will just have to do something like this:

```
import textract
text = textract.process('path/to/file.extension')
```

to obtain text from a document. You can also pass keyword arguments to `textract.process`, for example, to use a particular method for parsing a pdf like this:

```
import textract
text = textract.process('path/to/a.pdf', method='pdfminer')
```

or to specify a particular output encoding (input encodings are inferred using `chardet`):

```
import textract
text = textract.process('path/to/file.extension', encoding='ascii')
```

When the file name has no extension, you specify the file's extension as an argument to `textract.process` like this:

```
import textract
text = textract.process('path/to/file', extension='docx')
```

## Additional options

Some parsers also enable additional options which can be passed in as keyword arguments to the `textract.process` function. Here is a quick table of available options that are available to the different types of parsers:

parser	option	description
gif	language	Specify the language for OCR-ing text with tesseract
jpg	language	Specify the language for OCR-ing text with tesseract
pdf	language	For use when <code>method='tesseract'</code> , specify the language
pdf	layout	With <code>method='pdftotext'</code> (default), preserve the layout
png	language	Specify the language for OCR-ing text with tesseract
tiff	language	Specify the language for OCR-ing text with tesseract

As an example of using these additional options, you can extract text from a Norwegian PDF using Tesseract OCR like this:

```
text = textract.process(
    'path/to/norwegian.pdf',
    method='tesseract',
    language='nor',
)
```

## A look under the hood

When `textract.process('path/to/file.extension')` is called, `textract.process` looks for a module called `textract.parsers.extension_parser` that also contains a `Parser`.

`textract.parsers.process` (*filename*, *encoding='utf\_8'*, *extension=None*, *\*\*kwargs*)

This is the core function used for extracting text. It routes the `filename` to the appropriate parser and returns the extracted text as a byte-string encoded with `encoding`.

Importantly, the `textract.parsers.extension_parser.Parser` class must inherit from `textract.parsers.utils.BaseParser`.

**class** `textract.parsers.utils.BaseParser`

Bases: `object`

The *BaseParser* abstracts out some common functionality that is used across all document Parsers. In particular, it has the responsibility of handling all unicode and byte-encoding.

**decode** (*text*)

Decode *text* using the `chardet` package.

**encode** (*text*, *encoding*)

Encode the *text* in *encoding* byte-encoding. This ignores code points that can't be encoded in byte-strings.

**extract** (*filename*, *\*\*kwargs*)

This method must be overwritten by child classes to extract raw text from a filename. This method can return either a byte-encoded string or unicode.

**process** (*filename*, *encoding*, *\*\*kwargs*)

Process *filename* and encode byte-string with *encoding*. This method is called by `textract.parsers.process()` and wraps the `BaseParser.extract()` method in a delicious unicode sandwich.

Many of the parsers rely on command line utilities to do some of the parsing. For convenience, the `textract.parsers.utils.ShellParser` class includes some convenience methods for streamlining access to the command line.

**class** `textract.parsers.utils.ShellParser`

Bases: `textract.parsers.utils.BaseParser`

The *ShellParser* extends the *BaseParser* to make it easy to run external programs from the command line with *Fabric*-like behavior.

**run** (*args*)

Run *command* and return the subsequent `stdout` and `stderr` as a tuple. If the command is not successful, this raises a `textract.exceptions.ShellError`.

**temp\_filename** ()

Return a unique tempfile name.

## A few specific examples

There are quite a few parsers included with `textract`. Rather than elaborating all of them, here are a few that demonstrate how parsers work.

**class** `textract.parsers.doc_parser.Parser`

Bases: `textract.parsers.utils.ShellParser`

Extract text from doc files using `antiword`.

**extract** (*filename*, *\*\*kwargs*)

## Installation

One of the main goals of `textract` is to make it as easy as possible to start using `textract` (meaning that installation should be as quick and painless as possible). This package is built on top of several python packages and other source libraries. Assuming you are using `pip` or `easy_install` to install `textract`, the `python packages` are all installed by default with `textract`. The source libraries are a separate matter though and largely depend on your operating system.

## Ubuntu / Debian

There are two steps required to run this package on Ubuntu/Debian. First you must install some system packages using the `apt-get` package manager before installing `textract` from `pypi`.

```
apt-get install python-dev libxml2-dev libxslt1-dev antiword unrtf poppler-utils_
↳pstotext tesseract-ocr \
flac ffmpeg lame libmad0 libsox-fmt-mp3 sox libjpeg-dev swig
pip install textract
```

---

**Note:** It may also be necessary to install `zlib1g-dev` on Docker instances of Ubuntu. See [issue #19](#) for details

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## OSX

These steps rely on you having `homebrew` installed as well as the `cask` plugin (`brew install caskroom/cask/brew-cask`). The basic idea is to first install `XQuartz` before installing a bunch of system packages before installing `textract` from `pypi`.

```
brew cask install xquartz
brew install poppler antiword unrtf tesseract swig
pip install textract
```

---

**Note:** `pstotext` is not currently a part of `homebrew` so `.ps` extraction must be enabled by manually installing from source.

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**Note:** Depending on how you have `python` configured on your system with `homebrew`, you may also need to install the `python` development header files for `textract` to properly install.

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## Don't see your operating system installation instructions here?

My apologies! Installing system packages is a bit of a drag and its hard to anticipate all of the different environments that need to be accomodated (wouldn't it be awesome if there were a system-agnostic package manager or, better yet, if `python` could install these system dependencies for you?!?!). If you're operating system doesn't have documentation about how to install the `textract` dependencies, please *contribute a pull request* with:

1. A new section in here with the appropriate details about how to install things. In particular, please give instructions for how to install the following libraries before running `pip install textract`:
  - `libxml2 2.6.21` or later is required by the `.docx` parser which uses `lxml` via `python-docx`.
  - `libxslt 1.1.15` or later is required by the `.docx` parser which users `lxml` via `python-docx`.
  - `python` header files are required for building `lxml`.
  - `antiword` is required by the `.doc` parser.
  - `pdftotext` is *optionally* required by the `.pdf` parser (there is a pure `python` fallback that works if `pdftotext` isn't installed).
  - `pstotext` is required by the `.ps` parser.
  - `tesseract-ocr` is required by the `.jpg`, `.png` and `.gif` parser.

- `sox` is required by the `.mp3` and `.ogg` parser. You need to install `ffmpeg`, `lame`, `libmad0` and `libsox-fmt-mp3`, before building `sox`, for these filetypes to work.
2. Add a requirements file to the `requirements` directory of the project with the lower-cased name of your operating system (e.g. `requirements/windows`) so we can try to keep these things up to date in the future.

## Contributing

The overarching goal of this project is to make it as easy as possible to extract raw text from any document for the purposes of most natural language processing tasks. In practice, this means that this project should preferentially provide tools that correctly produce output that has words in the correct order but that whitespace between words, formatting, etc is totally irrelevant. As the various parsers mature, I fully expect the output to become more readable to support additional use cases, like [extracting text to appear in web pages](#).

Importantly, this project is committed to being as agnostic about how the content is extracted as it is about the means in which the text is analyzed downstream. This means that `textract` should support multiple modes of extracting text from any document and provide reasonably good defaults (defaulting to tools that tend to produce the correct word sequence).

Another important aspect of this project is that we want to have extremely good documentation. If you notice a type-o, error, confusing statement etc, please fix it!

## Quick start

1. Fork and clone the project:

```
git clone https://github.com/YOUR-USERNAME/textract.git
```

2. Contribute! There are several [open issues](#) that provide good places to dig in. Check out the [contribution guidelines](#) and send pull requests; your help is greatly appreciated!

Depending on your development preferences, there are lots of ways to get started developing with `textract`:

## Developing in a native Ubuntu environment

3. Install all the necessary system packages:

```
./provision/travis-mock.sh
./provision/debian.sh

# optionally run some of the steps in these scripts, but you
# may want to be selective about what you do as they alter global
# environment states
./provision/python.sh
./provision/development.sh
```

4. On the virtual machine, make sure everything is working by running the suite of functional tests:

```
nosetests
```

These functional tests are designed to be run on an Ubuntu 12.04 LTS server, just like the virtual machine and the server that runs the `travis-ci` test suite. There are some other tests that have been added along the way in the [Travis configuration](#). For your convenience, you can run all of these tests with:

```
./tests/run.py
```

Current build status:

### Developing with Vagrant virtual machine

3. Install [Vagrant](#) and [Virtualbox](#) and launch the development virtual machine:

```
vagrant plugin install iniparse
vagrant up && vagrant provision
```

On `vagrant ssh`ing to the virtual machine, note that the `PYTHONPATH` and `PATH` [environment variables have been altered in this virtual machine](#) so that any changes you make to `textract` in development are automatically incorporated into the command.

4. See [step 4](#) in the Ubuntu development environment. Current build status:

### Developing with Docker container

3. Go to the [Docker documentation](#) and follow the instructions under “If you’d like to try the latest version of Docker” to install Docker.
4. Just run `tests/run_docker_tests.sh` to run the full test suite. Current build status:

## Change Log

This project uses [semantic versioning](#) to track version numbers, where backwards incompatible changes (highlighted in **bold**) bump the major version of the package.

### latest changes in development for next release

#### 1.6.1

- several bug fixes, including:
  - fixing the `readthedocs` build (#150)

#### 1.6.0

- Let the user provide file extension as an argument when the file name has no extension (#148 by @motazsaad)
- Added ability to parse audio with `pocketsphinx` (#122 by @barrust)
- Added ability to parse `.psv` and `.tsv` files (#141)
- several bug fixes, including:
  - checking for the importability of a parser rather than the presense of the file (#136 by @AusIV)
  - manage versions with `bumpversion` (#146)
  - properly reporting on missing external dependencies (#139 by @AusIV)
  - pin `chardet` to version 2.1.1 to avoid decode errors (#107)

- avoid unicode decode error with html parser (#147 by @suned)
- enabling autocomplete and improving error handling (#149)

### 1.5.0

- Added python 3 support, including pdfminer (#104 by @sirex via #126)
- Python 3 support for pdfminer using pdfminer.six (#116 by @jaraco via #126)
- fixed security vulnerability by properly using subprocess.call (#114 by @pierre-ernst)
- updating to tesseract 3.03 (#127)
- adding a .tif synonym for .tiff files (#113 by @onionradish)
- improved .docx support using docx2txt (#100 by @ankushshah89)
- several bug fixes, including:
  - including all requirements for Pillow (#119 by @akoumjian)

### 1.4.0

- added layout preservation option for pdftotext pdf extractor (#93 by @ankushshah89)
- added simple support for extensionless filenames, treating them as plain .txt files (#85)
- several bug fixes, including:
  - now extracting the text in tables from docx files at the end of the text extraction (#92 by @jsmith-mploir)
  - faster testing framework by only rebuilding test data when needed (#90)
  - fixed .html and .epub parsers to deal with beautifulsoup4 upgrades
  - using official msg-extractor now that it has a native setup.py
  - updated tests for .html, .ogg, .wav, and .mp3 file types to be consistent with more recent versions of the underlying packages.

### 1.3.0

- support for .rtf files (#84)
- support for .msg files (#87 and #17 by @anthonygarvan)

### 1.2.0

- support for .tiff files (#81)
- added support for other languages for tesseract (#76 by @anderser)
- added --option/-O flag to pass arbitrary arguments for things like languages into textract
- several bug fixes, including:
  - fix bug with doing OCR on multi-page pdfs and removing temporary directory (#82 by @pudo)
  - correctly accounting for whitespace in .odt documents (#79 by @evfredericksen)

- standardizing testing environment to be compatible with different versions of third-party command line tools (#78)

### 1.1.0

- support for .wav, .mp3, and .ogg files (#56 and #62 by @arvindch)
- support for .csv files (#64)
- support for scanned .pdf files with tesseract (#66 by @pudo)
- support for .htm files (#69)
- several bug fixes, including:
  - .odt parser now correctly extracts text in order (#61 by @levivm)
  - fixed Docker development environment compatability with the Vagrant VM environment (#73 by @ShawnMilo)
- several internal improvements, including:
  - improvements in the python documentation (#70)
  - improved html output with reduced whitespace around inline elements in output text (#58 by @eiotec)

### 1.0.0

- **standardized encoding of output with `-e/--encoding` option** (#39)
- support for .xls and .xlsx files (#42 and #55 by @levivm)
- support for .epub files (#40 by @kokxx)
- several bug fixes, including:
  - removing tesseract version info from output of image parsers (#48)
  - problems with spaces in filenames (#53)
  - concurrency problems with tesseract (#44 by @ShawnMilo, #41 by @christomitov)
- several internal improvements, including:
  - switching to using class-based parsers to abstract away the common functionality between different parser classes (#39)
  - switching to using a python-based test suite and added standardized text tests to make sure output is consistent across file types (#49)
  - including support for Docker-based testing (#46 by @ShawnMilo)

### 0.5.1

- several bug fixes, including:
  - documentation fixes
  - shell commands hanging on large files (#33)



## 0.5.0

- support for `.json` files (#13 by @anthonygarvan)
- support for `.odt` files (#29 by @christomitov)
- support for `.ps` files (#25)
- support for `.gif`, `.jpg`, `.jpeg`, and `.png` files (#30 by @christomitov)
- several bug fixes, including:
  - improved fallback handling in `.pdf` parser if the `pdftotext` command line utility isn't installed (#26)
  - improved documentation for installation instructions on non-Ubuntu operating systems (#21, #26)
- several internal improvements, including:
  - cleaned up implementation of extension parsers to avoid magic

## 0.4.0

- support for `.html` files (#7)
- support for `.eml` files (#4)
- automated the documentation for the python package using `sphinx-apidoc` in `docs/Makefile` (#9)

## 0.3.0

- support for `.txt` files, haha (#8)
- fixed installation bug with not properly including requirements files in the manifest

## 0.2.0

- support for `.doc` files (#2)
- support for `.pdf` files (#3)
- several bug fixes, including:
  - fixing tab complete bug no file paths (#6)
  - fixing tests to make sure the work properly on travis-ci

## 0.1.0

- Initial release, support for `.docx` and `.pptx`



## CHAPTER 3

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### Indices and tables

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