konch

Release 4.5.0

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Release v4.5.0

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CHAPTER

ONE

ABOUT

konch is a CLI and configuration utility for the Python shell, optimized for simplicity and productivity.

- **Automatically import** any object upon startup
- **Simple**, per-project configuration in a single file (it's just Python code)
- **No external dependencies**
- Uses **IPython**, **BPython**, or **ptpython** if available, and falls back to built-in interpreter
- Automatically load **IPython extensions**

1.1 Example Use Cases

- If you're building a web app, you can have all your models in your shell namespace without having to import them individually. You can also run any necessary database or app setup.
- If you're building a Python package, you can automatically import all of its modules.
- In a live demo, skip the imports.
- Immediately have test objects to work with in interactive sessions.

CHAPTER

TWO

INSTALL/UPGRADE

```
$ pip install -U konch
```

Supports Python>=3.8. There are no external dependencies.

Note: If you are using Python 2, `konch<4.0` will be installed with the above command.

CHAPTER

THREE

USAGE

3.1 $ konch init [<config_file>]

creates a `.konchrc` file in your current directory.

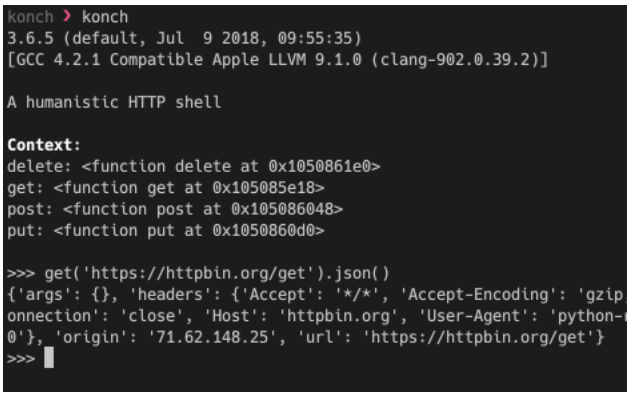
`.konchrc` is a Python file that calls the `konch.config(config_dict)` function. See the *Configuration* section for a listing of options.

Here is an example `.konchrc` file that includes some functions from the requests library in its context.

```
# .konchrc
import konch
import requests

konch.config(
    {
        "context": [requests.get, requests.post, requests.put, requests.delete],
        "banner": "A humanistic HTTP shell",
    }
)
```

This would produce the following shell:



See also:

For more examples, see the example_rcfiles directory.

Note: `.konchrc` files created with `konch init` are automatically authorized.

Note: You can override the default file contents of `.konchrc` by creating a `~/.konchrc.default` file in your home directory.

3.2 $ konch edit [<config_file>]

opens the current config file in your editor. Automatically authorizes the file when editing is finished.

Checks the `KONCH_EDITOR`, `VISUAL` and `EDITOR` environment variables (in that order) to determine which editor to use.

3.3 $ konch [-f <config_file>]

runs the shell. Uses `.konchrc` as the configuration file, by default.

3.4 $ konch -s <shell>

overrides the default shell. Choose between `ipy`, `bpy`, `py`, `ptpy`, `ptipy`, or `auto`.

3.5 $ konch allow [<config_file>]

authorizes a config file. **You MUST authorize new or edited config files before executing them**. This is a security mechanism to prevent execution of untrusted code.

By default, the auth file is stored in `~/.local/share/konch_auth`. You can change the location by setting the `KONCH_AUTH_FILE` environment variable.

3.6 $ konch deny [<config_file>]

removes authorization for a config file.

3.7 $ konch -n <name>

selects a *named config*.

Named configs allow you to have multiple configurations in the same `.konchrc` file.

```
# .konchrc
import konch
import os
import sys
import requests
import flask

```

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```
# The default config
konch.config({"context": [os, sys]})

konch.named_config("http", {"context": [requests.get, requests.post]})

konch.named_config(
    "flask", {"context": [flask.Flask, flask.url_for, flask.render_template]}
)
```

To use the `flask` config, you would run:

```
$ konch -n flask
```

You can also pass multiple names to `named_config`:

```
# konch -n flask
# OR
# konch -n fl
konch.named_config(
    ["flask", "fl"], {"context": [flask.Flask, flask.url_for, flask.render_template]}
)
```

CHAPTER

FOUR

CONFIGURATION

- `context`: A dictionary or list of objects that will be be available in your shell session. May also be a callable that returns a dictionary or list.
- `shell`: Default shell. May be `'ipy'`, `'bpy'`, `'ptpy'`, `'ptipy'`, `'py'`, or `'auto'` (default). You can also pass a `Shell` class directly, such as `konch.IPythonShell`, `konch.BPythonShell`, `konch.PtPythonShell`, `konch.PtIPythonShell`, `konch.PythonShell`, or `konch.AutoShell`.
- `banner`: Custom banner text.
- `prompt`: The input prompt (not supported with BPython).
- `output`: (IPython and ptipython only) The output prompt.
- `context_format`: Format to display `context`. May be `'full'`, `'short'`, `hide`, or a function that receives the context dictionary as input and returns a string.
- `ipy_extensions`: (IPython and ptipython only) IPython extensions to load at startup.
- `ipy_autoreload`: (IPython and ptipython only) Whether to enable the IPython `autoreload` extension.
- `ipy_colors`: (IPython only) Color scheme.
- `ipy_highlighting_style`: (IPython only) Syntax highlighting style.
- `ptpy_vi_mode`: (ptpython and ptipython only) Whether to enable vim bindings.

CHAPTER

FIVE

SETUP AND TEARDOWN FUNCTIONS

You can optionally define `setup()` and/or `teardown()` functions which will execute immediately before and after running the shell, respectively.

```
from pathlib import Path
import shutil
import konch


def setup():
    Path("my_temp_dir").mkdir()


def teardown():
    shutil.rmtree("my_temp_dir")


konch.config({"context": [Path]})
```

CHAPTER

SIX

IPYTHON EXTRAS

konch provides a few IPython-specific options.

6.1 Loading Extensions

The `ipy_extensions` option is used to automatically load IPython extensions at startup.

```
import konch

konch.config(
    {
        # ...
        "shell": "ipython",
        "ipy_extensions": ["autoreload", "rpy2.ipython"],
    }
)
```

6.2 Autoreload

The `ipy_autoreload` option enables and initializes the IPython autoreload extension at startup.

```
import konch

konch.config(
    {
        # ...
        "shell": "ipython",
        # Automatically reload modules
        "ipy_autoreload": True,
    }
)
```

This is equivalent to running:

```
% load_ext autoreload
% autoreload 2
```

6.3 Colors

The `ipy_colors` and `ipy_highlighting_style` options are used to configure colors in the IPython shell. `ipy_colors` sets the color of tracebacks and object info (the output of e.g. `zip?`). `ipy_highlighting_style` sets colors for syntax highlighting.

```
import konch

konch.config(
    {
        # ...
        "shell": "ipython",
        # 'linux' is optimized for dark terminal backgrounds
        "ipy_colors": "linux",
        "ipy_highlighting_style": "monokai",
    }
)
```

See the IPython docs for more information and valid values for these options: https://ipython.readthedocs.io/en/stable/config/details.html#terminal-colors

CHAPTER

SEVEN

PTPYTHON SUPPORT

konch supports both ptpython and ptipython. If either is installed in your current environment, running konch will run the available shell.

konch provides a few ptpython-specific options.

To use ptpython's vi-style bindings, set the `ptpy_vi_mode` option in your `.konchrc`. You can also use the `ipy_extensions` option to load IPython extensions at startup (must be using `ptipython`).

```
import konch

konch.config(
    {
        # ...
        "shell": "ptipython",
        "ptpy_vi_mode": True,
        "ipy_extensions": ["autoreload"],
    }
)
```

CHAPTER

EIGHT

USING .KONCHRC.LOCAL

If you're distributing your `.konchrc` in a git repo, you may want to allow collaborators to extend your configuration in an unversioned `.konchrc.local` file.

First, add `.konchrc.local` to `.gitignore`.

```
# .gitignore

.konchrc.local
```

Then add the following to your `.konchrc`:

```
# .konchrc

from pathlib import Path

# konch.config(...)

if Path(".konchrc.local").exists():
    konch.use_file(".konchrc.local", trust=True)
```

Note: The `context` in `.konchrc.local` will be merged with the `context` in `.konchrc`.

Note: Passing `trust=True` allows `.konchrc.local` to be edited without requiring approval. **This is safe if (and only if) .konchrc.local is not added to source control.**

Note: `setup()` and `teardown()` cannot be used in `.konchrc.local`.

CHAPTER

NINE

PROGRAMMATIC USAGE

Want to use konch within a Python script? konch exposes many of its high-level functions.

```
import konch
from mypackage import cheese

# Start the shell
konch.start(context={"cheese": cheese}, shell=konch.AutoShell)
```

To use a config file:

```
import konch

konch.use_file("~/path/to/.mykonchrc")
konch.start()
```

Get command-line arguments using `konch.parse_args()`. konch uses docopt for arguments parsing.

```
import konch
from myapp import app, db

args = konch.parse_args()
if args["--name"] == "db":
    # ...expensive database setup...
    konch.start(context={"db": db, "app": app})
else:
    konch.start(context={"app": app})
```

You can also use shell objects directly:

```
import konch

my_shell = konch.AutoShell(context={"foo": 42}, banner="My foo shell")
my_shell.start()
```

> "Praise the Magic Conch!"

CHAPTER

TEN

PROJECT INFO

10.1 License

```
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THE SOFTWARE.
```

10.2 Changelog

10.2.1 5.0.0 (unreleased)

- *Backwards-incompatible*: Remove `konch.__version__` attribute. Use `importlib.metadata.version("konch")` instead.

10.2.2 4.5.0 (2024-01-10)

Features:

- Install konch within a *konch* package. This prevents *docopt.py* from polluting the site packages directory.
- Add *py.typed* marker file for PEP 561 compatibility.

Other changes:

- Drop support for Python 3.7 (EOL).
- Test against Python 3.11 and Python 3.12.

10.2.3 4.4.0 (2022-01-12)

Bug fixes:

- Fix compatibility with IPython 8.0 (#211).

Other changes:

- Drop support for Python 3.6 (EOL).
- Test against Python 3.10.

10.2.4 4.3.0 (2020-11-29)

Features:

- Follow XDG standard in config file discovery (#177). Thanks @rpdelaney for PR and the suggestion.

Other changes:

- Test against Python 3.8 and 3.9.

10.2.5 4.2.2 (2019-06-19)

Bug fixes:

- Remove usage of deprecated `imp` module.
- Handle `AttributeError` when object in context list has no `__name__` attribute (#105). Thanks @brl0 for reporting.

10.2.6 4.2.1 (2019-03-16)

Bug fixes:

- Prevent error when ptpython config file exists (#84). Thanks @svanburen.

10.2.7 4.2.0 (2019-03-12)

Features:

- Add BPython Curses shell (#78). Thanks @goandbuild for the suggestion and PR.

10.2.8 4.1.1 (2019-02-28)

Bug fixes:

- Fix casing when using *"context_format": "short"*.

10.2.9 4.1.0 (2019-01-24)

Features:

- Use a `[y/N]` prompt for authorizing a config file instead of requiring user to run `konch allow`.

10.2.10 4.0.1 (2019-01-19)

Bug fixes:

- Fix behavior when `konch edit` is passed a file that does not exist.

Other changes:

- Various documentation improvements and updates.

10.2.11 4.0.0 (2019-01-19)

Features:

- Add ANSI coloring and improve messaging (#67).
- `konch.config()` will shallow-merge `context` when called multiple times.
- `konch edit` may be passed a filename to edit.
- `konch.main` accepts an `argv` argument.
- Add `trust` parameter to `konch.use_file()`.

Other changes:

- Python 2 is no longer supported. Python>=3.6 is officially supported.

10.2.12 3.2.1 (2019-01-17)

Bug fixes:

- Fix handling of nested modules when passing a list to `context`.

10.2.13 3.2.0.post0 (2019-01-13)

- Add `python_requires` to PyPI metadata.

3.2.x will be the last release line to support Python 2.

10.2.14 3.2.0 (2019-01-11)

- Show preview when .konchrc file has changed.

10.2.15 3.1.0 (2018-12-29)

- Show preview of unauthorized files.

10.2.16 3.0.0.post0 (2018-12-22)

- Distribute a universal wheel.

10.2.17 3.0.0 (2018-12-22)

Features:

- Config files must be approved before executing them. Use `konch allow` to authorize a config file. This is a security mechanism to prevent executing untrusted Python code (#47). Thanks @hartwork for the suggestion.
- Allow customizing the editor to use for `konch edit` via the `KONCH_EDITOR` environment variable.
- `konch init` only adds the encoding pragma (`# -*- coding: utf-8 -*-\n`) on Python 2.
- Raise error when an invalid `--name` is passed.

Bug fixes:

- Respect ptpython's user config file (`~/.ptpython/config.py`) (#16). Thanks @nasyxx for reporting and thanks @pycadelic for helping out with the implementation.
- Address a `DeprecationWarning` about importing from `collections.abc` on Python 3.7.

10.2.18 2.5.0 (2018-11-04)

- Update dev environment.
- Python 3.4 is no longer officially supported.
- Tested on Python 3.7.

10.2.19 2.4.0 (2017-04-29)

Features:

- Add basic tab-completion to plain Python shell.

10.2.20 2.3.0 (2016-12-23)

Features:

- Allow `context` to be a callable.
- Multiple names may be passed to `named_config`.

10.2.21 2.2.1 (2016-12-19)

Bug fixes:

- Fix error raised when some options are passed to `konch.named_config`.

10.2.22 2.2.0 (2016-07-21)

Features:

- Add `ipy_colors` and `ipy_highlighting_style` options for customizing IPython terminal colors.

10.2.23 2.1.0 (2016-07-18)

Features:

- Compatibility with IPython>=5.0.0.

Support:

- Update tasks.py for compatibility with invoke>=0.13.0.

10.2.24 2.0.0 (2016-06-01)

Features:

- Customizable context formatting via the `context_format` option.
- More CONCHES!

Deprecations/Removals:

- Remove `hide_context` option. Use the `context_format` option instead.
- Drop support for Python<=2.6 and <=3.3.

Bug fixes:

- Fix bug in checking availability of PtIPython.
- Fix bug in passing shell subclass as `shell` argument to `konch.start`.

10.2.25 1.1.2 (2016-05-24)

- `ShellNotAvailableErrors` no longer pollute tracebacks when using the `AutoShell`.

10.2.26 1.1.1 (2015-09-27)

- Remove deprecated import of IPython.config.

10.2.27 1.1.0 (2015-06-21)

- Add ptpython support.

10.2.28 1.0.0 (2015-02-08)

- Add support for `setup` and `teardown` functions in `.konchrc` files.
- If `~/.konchrc.default` exists, use that file as the template for new `.konchrc` files created with `konch init`.
- Add `ipy_extensions` and `ipy_autoreload` options.
- Make sure that vim opens .konchrc files in Python mode.
- Drop Python 3.2 support.

10.2.29 0.4.2 (2014-07-12)

- "shell" option in .konchrc can be a string: either 'bpy', 'ipy', 'py', or 'auto'.
- Fix error in "konch edit".

10.2.30 0.4.1 (2014-06-23)

- Fix bug that caused konch to hang if no .konchrc file can be found.

10.2.31 0.4.0 (2014-06-10)

- Add `edit` command for editing .konchrc file.
- Properly output error messages to stderr.
- Tested on Python 3.4.

10.2.32 0.3.4 (2014-04-06)

- Fix bug that raised *SyntaxError* when executing konch on Windows.

10.2.33 0.3.3 (2014-03-27)

- Fix bug in resolve_path that caused infinite loop if config file not found.
- Fix bug with initializing konch in home directory.
- Add `hide_context` option.

10.2.34 0.3.2 (2014-03-18)

- Some changes to make it easier to use konch programatically.
- `konch.start()` can be called with no arguments.
- Expose docopt argument parsing via `konch.parse_args()`.

10.2.35 0.3.1 (2014-03-17)

- Doesn't change current working directory.
- Less magicks.
- Tested on Python 3.4.

10.2.36 0.3.0 (2014-03-16)

- Smarter path resolution. konch will search parent directories until it finds a .konchrc file to use.
- Make prompt configurable on IPython and built-in shell. Output template is also supported on IPython.
- *Backwards-incompatible*: Remove support for old (<=0.10.x–released 3 years ago!) versions of IPython.

10.2.37 0.2.0 (2014-03-15)

- Fix bug with importing modules and packages in the current working directory.
- Introducing *named configs*.

10.2.38 0.1.0 (2014-03-14)

- First release to PyPI.