
mod_nest_exp

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An algorithm that computes modular nested exponentiation efficiently.

`mod-nest-exp` exports a Python function `mod_nest_exp` that takes as input an arbitrarily long sequence of positive integers a_1, a_2, \dots, a and a positive integer m and computes $a_1^{(a_2^{(\dots^{a^{\dots}})})} \bmod m$ efficiently (that is, without computing the value of the nested exponent).

To date, this problem was not solvable by computers in the general case.

CHAPTER ONE

SETUP

Run `pip install mod-nest-exp` in a shell to download the latest release from PyPI, or have a look at the [Installation page](#) to find other ways to install `mod-nest-exp`.

Note: `mod-nest-exp` requires Python v3.6+. For best performance, install `gmpy2` and `sympy`:

```
$ apt install libgmp-dev libmpfr-dev libmpc-dev # required for gmpy2
$ pip install gmpy2 sympy
```

2.1 Installation

2.1.1 PyPI

`mod-nest-exp` is hosted on GitHub, but the easiest way to install it is to download the latest release from its [PyPI repository](#):

```
$ pip install --user mod-nest-exp
```

2.1.2 GitHub + pip

If, for any reason, you prefer to download the library from GitHub, you can clone the repository and install the repository by running (with the admin rights):

```
$ pip install --user https://github.com/avivbrook/modular-nested-exponentiation/  
↪archive/master.zip
```

Keep in mind this will install the development version of the library, so not everything may work as expected compared to a stable release.

2.1.3 GitHub + setuptools

If you do not have `pip` installed, you can still clone the repository and run the `setup.py` file manually:

```
$ git clone https://github.com/avivbrook/modular-nested-exponentiation.git  
$ cd modular-nested-exponentiation  
# python setup.py install
```

2.2 To-do

- Add testing for prelim methods.

2.3 About

2.3.1 Authors

mod-nest-exp is developed and maintained by:



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INDICES AND TABLES

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