Development Document for KmerGO

v1.5.0

Apr 26th, 2020

Introduction

Thank you for downloading KmerGO, a user-friendly tool to identify the *group-specific* sequences on two groups of high throughput sequencing datasets.

This is a document for developers who want to know how KmerGO works or improve KmerGO.

Environment Setup For Development

Platform:

Windows 7/8/10 (x64)
Linux (x64): CentOS 7.5+, Ubuntu 16.04+, Deepin 15.11+, Fedora 30+, Debian 9.4+, etc

Libs requirement for linux system:

GLIBC_2.17+, GLIBCXX_3.4.19+, ZLIB_1.2.7+

Language:

Python 3.6.8, C++

Packages requirement for python:

numpy=1.16.2, scipy=1.3.1, pandas=1.0.3, scikit-learn=0.21.3, joblib=0.13.2, PyQt5=5.13.0, PyQt5-sip=12.7.0

Installing Python

- Install python 3.6.8 on Windows

  You can get python 3.6.8 installation package from the URL:
  https://www.python.org/ftp/python/3.6.8/python-3.6.8-amd64.exe
  And run the python-3.6.8-amd64.exe according to the prompt.

- Install python 3.6.8 on Linux

  You can get python 3.6.8 source code from the URL:
  https://www.python.org/ftp/python/3.6.8/Python-3.6.8.tgz
  And follow these steps to install python 3.6.8:

  1. Decompress "Python-3.6.8.tgz" using commandline:

     ```
     tar –xzvf Python-3.6.8.tgz
     ```

  2. Enter the source code directory:

     ```
     cd Python-3.6.8
     ```

  3. Install python:

     ```
     ./configure --prefix=/usr/local
     make && make install
     ```

  4. Creating symbolic links:

     ```
     ln -s /usr/local/bin/python3.6 /usr/bin/python3
     ln -s /usr/local/bin/pip3.6 /usr/bin/pip3
     ```

Installing Python Packages

- Command of installing dependent packages:

```
pip3 install sklearn
pip3 install pandas
pip3 install PyQt5==5.13.0
```

Reference

To compile "Loser_Tree_Lib.cpp", you can use "g++ -shared -fPIC Loser_Tree_Lib.cpp -o Loser_Tree_Lib.so" to obtain the "Loser_Tree_Lib.so" on a Linux platform, or use "g++ -shared -fPIC -m64 Loser_Tree_Lib.cpp -o Loser_Tree_Lib.dll" to obtain the "Loser_Tree_Lib.dll" on a Windows(x64) platform.

KMC tool is improved from https://github.com/refresh-bio/KMC

CAP3 tool quotes from http://seq.cs.iastate.edu/cap3.html

Software packaging

Install the package of "pyinstaller", and you can get it using "pip3 install pyinstaller" from the Internet. After that, you can type "pyinstaller KmerGO.spec" from the command line to build the executable software.

Contact

If you have any questions while using the software, welcome to contact us.

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