Scallop User Reference

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1 Installation

To install Scallop, you need to first download/compile a few sofware packages (Samtools, Boost, and GUROBI), setup the corresponding environmental variables, and then compile the source code of Scallop.

1.1 Install Samtools

Download Samtools from `http://www.htslib.org/` with verion 1.2 or higher. Compile it to generate the htslib file `libhts.a`. Set environment variable `HTSLIB` to indicate the directory of `libhts.a`. For example, for Unix plateforms, add the following statement to the file `~/.bash_profile`:

```
export HTSLIB="/directory/to/your/htslib/htslib-1.2.1"
```

1.2 Install Boost

Download Boost from `http://www.boost.org`. Uncompress it somewhere (compiling and installing are not necessary). Set environment variable `BOOST_HOME` to indicate the directory of Boost. For example, for Unix plateforms, add the following statement to the file `~/.bash_profile`:

```
export BOOST_HOME="/directory/to/your/boost/boost_1_60_0"
```

1.3 Install GUROBI

Download GUROBI from `http://www.gurobi.com/` (compiling and installing are not required). You need to apply an academic license to use the full features of GUROBI (Please refer to the GUROBI documentation for more information.) After that, set two environment variables, `GUROBI_HOME` and `GRB_LICENSE_FILE`, which indicates the directory of GUROBI, and the location of your license file, respectively. For example, for Unix plateforms, add the following two statements to the file `~/.bash_profile`:

```
export GUROBI="/directory/to/your/gurobi/linux64"
export GRB_LICENSE_FILE="/location/of/your/license/gurobi.lic"
```

1.4 Compile Scallop

Get the source code of Scallop through `git`:

```
$git clone git@github.com:shaomingfu/scallop.git .
```

Execute the following commands to generate `Makefile` and compile:

```
$cd src
```

```
$aclocal
$autoconf
$autoheader
$automake -a
$./configure
$make
```

The executable file `scallop` will be present at `src/src`. You might want to link it into `bin` through

```
$cd bin
$ln -sf ../src/src/scallop .
```

2 Command line

The usage of Scallop is as follows:

```
$./scallop <config-file> <bam-file>
```

There is an example for config-file `example.config` at the directory `bin`. The bam-file is the reads/reference alignment file that can be generated by TopHat or Bowtie.

Currently two files will be generated by the program in the current directory: the file with name `greedy.gtf` gives the predicted transcripts using the greedy algorithm; the file with name `iterat.gtf` gives the predicted transcripts using the iterated algorithm.