

EZjob

In [1]:

```
from ezjob import *
```

executed in 1.80s, finished 06:46:08 2020-06-28

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Why?

- Communication cost
- Work reproduction
- HPC jobs management
- Interactive data analysis/visualization



A python extension for Jupyter Notebook

What?



- Manage remote HPC jobs.
- Run your remote shell at Jupiter notebook like local.
- Organize whole workflow by one Jupyter notebook.
- A Swiss army knife of SSH SFTP for IPython/Jupyter notebook.
- Support Port/X11 forwarding.
- Support multi Auth methods. (login: Duo, SSH JUMP, PrivateKey, PASS)
- Line/Cell magic of Jupyter notebook.
- JobManger UI, remote terminal UI
- Sync local/remote folders

HOW?

EZjob

The screenshot shows the EZjob interface with a Jupyter Notebook on the left and an EZjob Watcher panel on the right.

Jupyter Notebook:

```
In [1]: from ezjob import *
```

executed in 1.80s, finished 06:46:08 2020-06-28

EZjob Watcher:

Job ID	Status	Time	SubmitTime	Note
2716755	Pending	0:00	2020-06-27 19:30:16	/vacuum_test/run_pw.sh
2716756	Pending	0:00	2020-06-27 19:30:16	/vacuum_test/run_pw.sh
2716773	Pending	0:00	2020-06-27 19:32:43	/vacuum_test/run_pw.sh
2716774	Pending	0:00	2020-06-27 19:32:43	/vacuum_test/run_pw.sh
2716754	Running	20:49	2020-06-27 19:30:16	/vacuum_test/run_pw.sh

Jupyter Notebook:

```
In [3]: %r pwd
```

executed in 7ms, finished 06:46:30 2020-06-28

```
pwd
```

/home/huangl1/scratch-midway2/simulation
[huangl1@midway2-login2 simulation]\$

```
In [5]: %r
```

executed in 8ms, finished 06:47:10 2020-06-28

```
ls -l
```

total 0

EZjob Watcher:

```
In [ ]: %ezjob
```

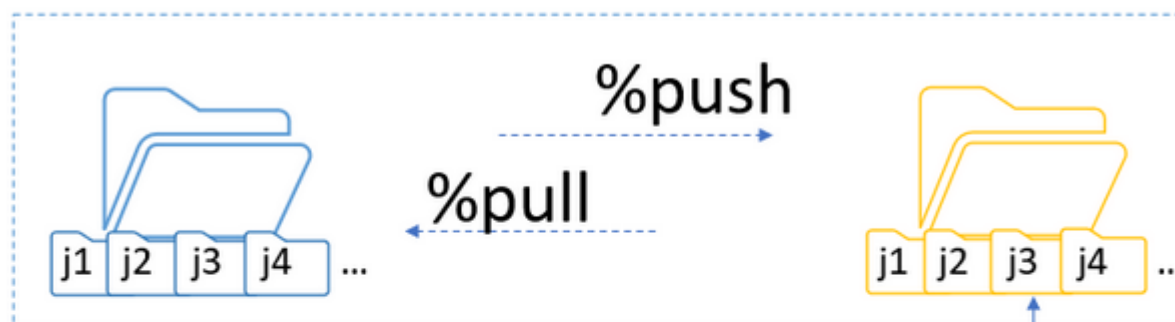
```
In [8]: %ezterm
```

executed in 73ms, finished 06:48:22 2020-06-28

EZterm(remote)

```
[huangl1@midway2-login2 ~]$
```

Local folder <-Mirror-> Remote folder



cheat sheet

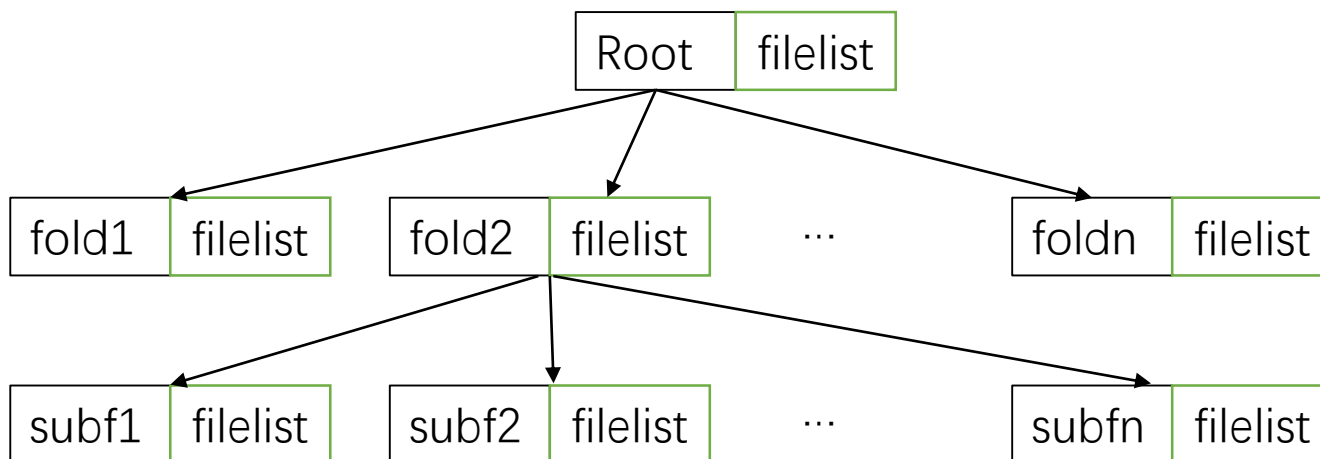
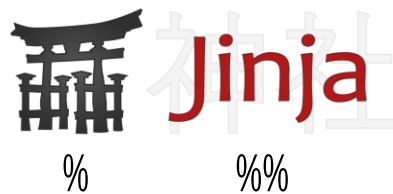
%submit run.sh @collect=result, prefix*,log		
ssh.port_forwarding(local_port, remote_port)		
%r pwd	%ezterm	%%r
%ezjob	%ezjob close	pwd
%ezxterm	%ezxterm close	ls
%push	%push --delete	cd ~
%pull	%pull --delete	%close

scratch

DEMO

Key Design

- Template system
- Line/Cell magic
- EZterm
- FileTracker : (Trie) ModifyTime MD5SUM



Issues



- JobManager submit jobid : regular expression as user config
- MacOS test : X11 forwarding on MacOS, PathTranslator in MacOS
- SSH/Transport compress=True Transport.windowssize optimize
- Optimize EZJobWatcher, only refresh when jobs status change