Installation and Usage Instructions

The source code is written in Python and requires no special packages. Therefore, there is no special installation instructions. Only installing common python packages through standard package management systems, such as apt, yum and pip, is required. For information on the file, please check README.md

1. Operating Systems

The source code is tested on Debian 9 and Mac OSX 10.15. To run on Windows, please change the path delimiter from "/" to "\\".

2. Python Environment

   Ptyhon 3.7, from the referenced CPython implementation.

3. Required Python Packages
   Please install the following python packages:
   1) Numpy
   2) recombinator
   3) argparse

4. Usage
   1) Please put all python scripts and the data in the same directory. That is, the structure of the directory should be:

      .
      |-- MetiorArtifacts.py
      |-- load_data.py
      |-- AWS – "AWS data directory"
      |-- Chameleon – "Chameleon data directory"

   2) The results are partition based on benchmark configurations, including benchmark name, cloud platform and VM type. When invoking the scripts, the exact configuration information must be specified. The following table gives the configuration information for all benchmarks, platforms and VM types. Note that, those parameters are case sensitive.

Config	Benchmark	Platform	VM Type	VM Config Name
1	ft	chameleon	m	C-Md
2	ft	chameleon	l	C-Lg
3	ep	chameleon	m	C-Md
4	ep	chameleon	l	C-Lg
5	jps	chameleon	s	C-Sm
6	jps	chameleon	m	C-Md
7	jps	chameleon	l	C-Lg

8	ycsb	chameleon	s	C-Sm
9	ycsb	chameleon	m	C-Md
10	ycsb	chameleon	l	C-Lg
11	tpcc	chameleon	s	C-Sm
12	tpcc	chameleon	m	C-Md
13	tpcc	chameleon	l	C-Lg
14	ima	chameleon	m	C-Md
15	ima	chameleon	l	C-Lg
16	ft	aws	s	A-Sm
17	ft	aws	m	A-Md
18	ft	aws	l	A-Lg
19	ep	aws	s	A-Sm
20	ep	aws	m	A-Md
21	ep	aws	l	A-Lg
22	jps	aws	s	A-Sm
23	jps	aws	m	A-Md
24	jps	aws	l	A-Lg
25	ycsb	aws	s	A-Sm
26	ycsb	aws	m	A-Md
27	ycsb	aws	l	A-Lg
28	tpcc	aws	s	A-Sm
29	tpcc	aws	m	A-Md
30	tpcc	aws	l	A-Lg
31	ima	aws	s	A-Sm
32	ima	aws	m	A-Md
33	ima	aws	l	A-Lg

3) To obtain the results, please invoke the main python script with the following format:
$ python3 MetiorArtifacts.py -bench *Benchmark* -plat *Platform* -vm *VMType -perc TargetStatistic -vali Validation -pos StartingPoint*

   a. Substitute the *Benchmark*, *platform* and *VMType* with the information from the above table.
   b. Substitute *TargetStatistic* with either: *mean*, *75* or *90*. Other percentiles are supported, but not fully evaluated.

c. Substitute *Validation* with: *yes* or *no*
d. Substitute *StartingPoint* with *any integer* and follow screen instructions

For example, to generate the mean value and validate it's accuracy for benchmark TPCC on AWS with VM type m5.xl (A-Md) at the initial data points, the script should be invoked as,

```
$ python3 MetiorArtifacts.py -bench tpcc -plat aws -vm m -perc mean -vali yes -pos 0
```

4) The output from the script will give the statistics of the applications shown in Table 3 (with it's accuracy if setting -vali yes). For example, for the above invocation with TPCC on A-Md, the outputs are:

```
Starting from point:  0
The mean value of the dataset:  80.1678
Ground truth validation succeed with accuracy: 99.38%
```