

Discussion 5: Experiment Results & Tool Demo

June 16, 2020

Experiment Results

General Result:

	2-Multiphase	5-Multiphase	SVMRanker	LassoRanker
FINITE	39	42	30	24
INFINITE	34	34	34	37
UNKNOWN	61	58	70	73
TIME	1107s	5709s	162s	1695s

Experiment Results

Time Details:

	2-Multiphase	5-Multiphase	SVMRanker
sampling	79.6s	472.0s	11.6s
training	52.4s	396.7s	4.8s
z3-solving	229.2s	4016.1s	22.6s

Experiment Results

Examples in SV-COMP15/Mumeric & Crafted:

	2-Multiphase	5-Multiphase	SVMRanker
FINITE	22	22	20
INFINITE	7	7	7
UNKNOWN	23	23	25

Experiment Results

Num of linear and non-linear loops

	2-Multiphase	5-Multiphase	SVMRanker	LassoRanker
linear	21	23	14	22
non-linear	18	19	16	2

Tool Demo

```
clexma@clexma-ThinkPad-P52s:~/Desktop/Disk_D/gitRepos/RankingExp/src$ python3 CLIMain.py
SVMRanker --- Version 1.0
Usage: CLIMain.py [OPTIONS] COMMAND [ARGS]...

Options:
  --help  Show this message and exit.

Commands:
  lmulti      SOURCE: path of source program file LOG: path of log...
  lnested     SOURCE: path of source program file LOG: path of log...
  parseboogie SOURCE: path of source boogie file PARSEOUTFILE: ath of...
  parsectoboogie SOURCE: path of source c file OUTFILE: path of output...
  parsectopy  SOURCE: path of source c file OUTFILE: path of output...
```

Tool Demo

```
clexma@clexma-ThinkPad-P52s:~/Desktop/Disk_D/gitRepos/RankingExp/src$ python3 CLIMain.py lmulti --help
```

```
SVMRanker --- Version 1.0
```

```
Usage: CLIMain.py lmulti [OPTIONS] SOURCE [LOG] [DEPTH BOUND]
```

SOURCE: path of source program file LOG: path of log folder, default set to ./Log_temp DEPTH_BOUND: depth bound of multiphase ranking function, default set to 2

Options:

```
--filetype [C|BOOGIE]           --file C: input is c file. --file BOOGIE:
                                input is boogie file
```

```
--sample_strategy [ENLARGE|CONSTRAINT]
--sample_strategy ENLARGE: enlarge the
sample zone when sample num not enough.
--sample_strategy CONSTRAINT: find feasible
points by constraint if sample num not
enough
```

```
--cutting_strategy [MINUS|MINI|POS]
    use f(x) < b to cut --cutting_strategy POS:
    b is a positive number --cutting_strategy
    MINUS: b is a negative number
    --cutting_strategy MINI: b is the minimum
    value of sampled points
```

```
--template_strategy [SINGLEFULL|FULL]
    templates used for learning
    --template_strategy SINGLEFULL: templates
    are either single variable or combination of
    all variables
```

[illegible]

Tool Demo

```
clexma@clexma-ThinkPad-P52s:~/Desktop/Disk_D/gitRepos/RankingExp/src$ python3 CLIMain.py lnested --help
SVMRanker --- Version 1.0
Usage: CLIMain.py lnested [OPTIONS] SOURCE [LOG]

SOURCE: path of source program file LOG: path of log folder, default set
to ./Log_temp

Options:
  --filetype [C|BOOGIE]          --file C: input is c file. --file BOOGIE:
                                input is boogie file

  --sample_strategy [ENLARGE|CONSTRAINT]
                                --sample_strategy ENLARGE: enlarge the
                                sample zone when sample num not enough.
                                --sample_strategy CONSTRAINT: find feasible
                                points by constraint if sample num not
                                enough

  --print_all [T|F]             --print_all T: print all the information of
                                the learning --print_all F: only print the
                                result information of the learning

  --help                         Show this message and exit.
```