

RTSS’23 Artifact Evaluation

This repository contains two different artifacts for reproducing the graphs and results contained in the paper titled: **Co-Located Parallel Scheduling of Threads to Optimize Cache Sharing**.

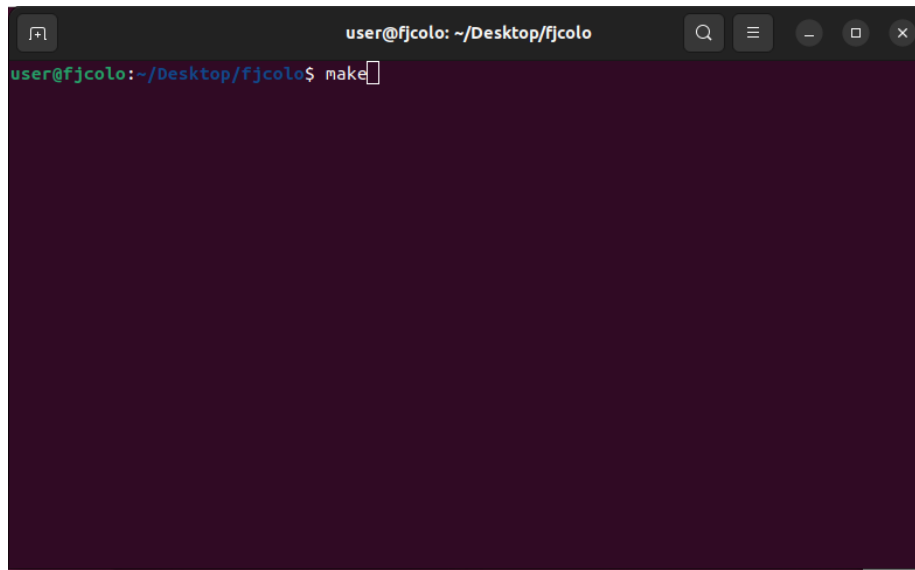
The two artifacts that the paper associates with is:

1. A simulated evaluation, presented in **Section VII**, of 3-PARM and 3-PARM-HD as comparisons to:
 1. Exact solutions with co-location EXACTCOLO and without EXACT-NOCOLO
 2. Graham’s 2-factor makespan approximation
 3. DAG core allocation algorithms without co-location DAG-m and co-location heuristics DAG-LP and DAG-GB.
2. An empirical experiment of a bare-metal Fork-Join scheduling algorithm presented in **Section VIII** of the paper.

Reproducing the Artifacts

Upon booting the VM a terminal and this PDF should have opened. The terminal should be in the `fjcolo` directory. A makefile has been provided to reproduce all data associated with the artifacts in this paper. Running the command `make` will reproduce several figures and extract the following figures:

1. Fig. 6: Schedulability Results
2. Fig. 7: Core Comparison for E
3. Fig. 8: Core Comparison for X
4. TABLE II: Mean Base B and Incremental Costs Y
5. Fig. 9: Task Analysis and Experimental Results of Group R
 - (a) FJ-791 F = .95
 - (b) FJ-956 F = .18
 - (c) FJ-484 F = .55

A terminal window with a dark background. The title bar shows 'user@fjcolo: ~/Desktop/fjcolo'. The prompt is 'user@fjcolo:~/Desktop/fjcolo\$' and the command 'make' has been entered, followed by a cursor.

Running the make command in the terminal

```
*geometry* detected driver: pdftex
[1{/var/lib/texmf/fonts/map/pdftex/updmap/pdftex.map} <./sched-by-count-cdf-all-eps-converted-to.pdf> <./schedulability-cache-reuse-count-all-eps-converted-to.pdf>] [2 <./task-791-per-core-composite-eps-converted-to.pdf> <./task-956-per-core-composite-eps-converted-to.pdf> <./task-484-per-core-composite-eps-converted-to.pdf>] (./graph.aux) )</usr/share/texlive/texmf-dist/fonts/type1/public/amsfonts/cm/cmmt10.pfb></usr/share/texlive/texmf-dist/fonts/type1/public/amsfonts/cm/cmmt12.pfb></usr/share/texlive/texmf-dist/fonts/type1/public/amsfonts/cm/cmmt7.pfb></usr/share/texlive/texmf-dist/fonts/type1/public/amsfonts/cm/cmmt9.pfb></usr/share/texlive/texmf-dist/fonts/type1/public/amsfonts/cm/cmmt10.pfb></usr/share/texlive/texmf-dist/fonts/type1/public/amsfonts/cm/cmmt12.pfb></usr/share/texlive/texmf-dist/fonts/type1/public/amsfonts/cm/cmmt8.pfb></usr/share/texlive/texmf-dist/fonts/type1/public/amsfonts/cm/cmmt10.pfb>
Output written on graph.pdf (2 pages, 127973 bytes).
Transcript written on graph.log.
Latexmk: Examining 'graph.log'
=== TeX engine is 'pdfTeX'
Latexmk: Log file says output to 'graph.pdf'
Latexmk: All targets (graph.pdf) are up-to-date
Rc files read:
  /etc/LatexMk
Latexmk: This is Latexmk, John Collins, 20 November 2021, version: 4.76.
mv ./graphs/graph.pdf artifacts.pdf
user@fjcolo:~/Desktop/fjcolo$
```

Expected output after make finishes

All reproduced figures and tables will be stored in a **graphs** folder generated by the makefile. In addition to this an **artifacts.pdf** compiled of all figures will be placed in the local directory.

Folder Contents

1. **makefile** - makefile that compiles all artifacts
2. **README.md** - source of this file.

3. `eval` - source of the simulated evaluation artifact
4. `simul` - source of the empirical experiment artifact
5. `paper.pdf` - a copy of the paper