

Collection of Job Scheduling Prediction Methods

Job Scheduling Strategies for Parallel Processing (JSSPP)
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Mehmet Soysal, Achim Streit



Motivation

- HPC Scheduler require accurate job run time
- Different reasons for job run time prediction
 - Job start time prediction
 - Power budget
 - Load distribution (I/O, Network, ...)
 - Advanced data staging
 - System Utilization
- Many publication which focus on slightly different aspects

Goals

- Collection of methods (Source code ...)
- Comparison of methods and results
- Sustainability after publication

What is needed for a collection

- Job Workloads and metadata
- Metrics and classification
- Repository for methods and results

Job Workloads and Metadata

- Established workload archives
 - Parallel Workload Archive (PWA)¹
 - JSSPP Workload Archive²
- Additional Metadata with companion logs
- Sometimes privacy sensitive metadata is used which cant be published

1 <https://www.cs.huji.ac.il/labs/parallel/workload/>

2 <https://jsspp.org/workload/>

Metrics and Classification

- Prediction accuracy metric
 - R^2 , MAE, MedAE, MASE, MAPE
 - Deviation in seconds (mm, hh), percentage, normalized ?
- Training needed (partial fit)?
- Solution for cold start?
- Over- and under estimates?
- ...

Repository Website

- Repo for freely available solutions (License)
- Can be used for further problems
 - e.g. node allocation prediction
- Initial website available on GitHub pages:
 - <https://hpc-job-scheduling-repo.github.io/>

Conclusion and Outlook

- Repository for HPC job wall time prediction
 - Only a starting point
 - Not replacing existing repos/archives (PWA ...)
- Comparison and sustainability
- Further methods and results are going to be added to the website

Thanks for your attention