Fairness-utility trade-off in multi-agent scheduling

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Abstract

We investigate the *price of fairness* in multi-agent scheduling problems and focus on the case of two agents, each having a set of jobs, that compete for use of a single machine to execute their jobs. We consider the situation where the two agents aim at minimizing their respective objective functions, namely, total completion time or maximum tardiness (possibly with respect to a common due date) of their jobs. In this scenario, we propose a definition of utility associated to the agents' objectives, and then we study both max-min and proportionally fair solutions, providing a tight bound on the price of fairness for each notion of fairness. Most of these results are reported in [1].

Keywords : *Multiagent Scheduling, Kalai-Smorodinsky Fairness, Proportional Fairness, Price of Fairness.*

References

[1] A. Agnetis, B. Chen, G. Nicosia, and A. Pacifici. Price of fairness in two-agent single-machine scheduling problems. *European Journal of Operational Research*, 276(1):79 – 87, 2019.