Meeting Scheduling

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1 Project Overview & Goal Description

One of the most relevant problems in multi-agent systems (MAS) is finding an optimal allocation between agents. An example application involves personal assistant agents attempting to optimize their users' time while scheduling multiple meetings [1]. As virtual assistants proliferate and become an integral part of our lives, such problems will become even more relevant.

Algorithms for solving the meeting scheduling problem, whether centralized or distributed, have runtime that increases with the total problem size. Thus, they can only handle problems of some bounded size. Current constraint optimization-based techniques for example can only handle the scheduling of a few tens of events. In order to be able to scale up, we need efficient heuristics that can find approximate solutions in constant time [2].

2 Project Steps

- Get acquainted with related work (see e.g. [1], [2]).

- Implement several multi-agent scheduling algorithms.

- Empirically evaluate the properties of the implemented techniques.

3 Required Skills

Good programming skills are required (proficiency in either Java or Python).
Being passionate about the topic and good English skills are a must.

References

[1] R. T. Maheswaran, M. Tambe, E. Bowring, J. P. Pearce, and P. Varakantham, "Taking dcop to the real world: Efficient complete solutions for distributed multi-event scheduling," in *Proceedings of the Third International Joint Conference on Autonomous Agents and Multiagent Systems-Volume 1*. IEEE Computer Society, 2004, pp. 310–317.

[2] P. Danassis, A. Filos-Ratsikas, and B. Faltings, "Anytime heuristic for weighted matching through altruism-inspired behavior," in *Proceedings of the Twenty-Eighth International Joint Conference on Artificial Intelligence, IJCAI-19.* International Joint Conferences on Artificial Intelligence Organization, 7 2019, pp. 215–222. [Online]. Available: https://doi.org/10.24963/ijcai.2019/31