Topic for Bachelor's Thesis





Title: Implementation of matching algorithms for group choices

Supervisor: Verena Dorner

Contact: verena.dorner@wu.ac.at

Starting period: immediately

Description:

Take this situation as an example: You are in a university course, and the lecturer assigns group tasks, to be presented in different timeslots. Students have preferences regarding topics, group members, and presentation timeslots. Conditions may include the number of students per group, the availability of students for timeslots etc. Matching objectives may include fairness of assignments, regret minimization and other criteria. Formulate an optimization problem for this situation. Identify additional preferences, conditions, and objectives that can be relevant to the situation. Discuss common algorithms for solving the problem, implement one and evaluate the results.

Technology: R (preferred), Python

Literature to start with:

Bichler, M., Hammerl, A., Morrill, T., & Waldherr, S. (2021). How to Assign Scarce Resources Without Money: Designing Information Systems that are Efficient, Truthful, and (Pretty) Fair. *Information Systems Research*, 32(2), 335-355. <u>https://doi.org/10.1287/isre.2020.0959</u>

Burkard, R., Dell'Amico, M., & Martello, S. (2012). *Assignment Problems* (Revised reprint). SIAM. ISBN 978-1-61197-222-1. <u>https://doi.org/10.1137/1.9781611972238</u>

Matoušek, J., & Gärtner, B. (2007). *Understanding and Using Linear Programming*. Berlin: Springer. ISBN 3-540-30697-8. <u>https://permalink.obvsg.at/wuw/AC05772460</u>

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