A Continuum Model of Stable Matching With Finite Capacities

NICK ARNOSTI, University of Minnesota

This paper introduces a unified framework for stable matching, which nests the traditional definition of stable matching in finite markets and the continuum definition of stable matching from Azevedo and Leshno [2016] as special cases. Within this framework, I identify a novel continuum model, which makes individual-level probabilistic predictions.

This new model always has a unique stable outcome, which can be found using an analog of the Deferred Acceptance algorithm. The crucial difference between this model and that of Azevedo and Leshno [2016] is that they assume that the amount of student interest at each school is deterministic, whereas my proposed alternative assumes that it follows a Poisson distribution. As a result, this new model accurately predicts the simulated distribution of cutoffs, even for markets with only ten schools and twenty students.

This model generates new insights about the number and quality of matches. When schools are homogeneous, it provides upper and lower bounds on students’ average rank, which match results from Ashlagi et al. [2017] but apply to more general settings. This model also provides clean analytical expressions for the number of matches in a platform pricing setting considered by Marx and Schummer [2021].

Full paper: https://arxiv.org/abs/2205.12881

Additional Key Words and Phrases: stable matching, market design

ACM Reference Format:
Nick Arnosti. 2022. A Continuum Model of Stable Matching With Finite Capacities. In Proceedings of the 23rd ACM Conference on Economics and Computation (EC '22), July 11–15, 2022, Boulder, CO, USA. ACM, New York, NY, USA, 1 page. https://doi.org/10.1145/3490486.3538230

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