

## **Stable Matching in Practice**

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*Abstract* :

Stable matching methods, based on the algorithm designed by Gale and Shapley, are used around the world in many applications such as college admissions. Several criteria measure the quality of the result: number of students assigned; rank of the college assigned to the applicant in their preference list; robustness; running time; etc.

After reviewing properties of the algorithm in the pure, ideal setting, we present issues arising in practice. The input data is uncertain and evolves with time, so a one-shot algorithm does not suffice. It is not feasible for admission committees to meet continuously, so the process cannot be fully dynamic. To reconcile those competing constraints, a hybrid implementation proceeding partly online on the student side was recently proposed for college admissions in France.

Finally, after remarking that the men-optimal stable matching and the women-optimal stable matching are almost identical, we propose a probabilistic model for highly correlated preferences to provide a theoretical explanation.