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Just, Equitable, and Efficient Algorithmic Allocation of Scarce Societal Resources

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Abstract: Demand for resources that are collectively controlled or regulated by society, like social services or organs for transplantation, typically far outstrips supply. How should these scarce resources be allocated? Any approach to this question requires insights from computer science, economics, and beyond; we must define objectives (foregrounding equity and distributive justice in addition to efficiency), predict outcomes (taking causal considerations into account), and optimize allocations, while carefully considering agent preferences and incentives.

In this talk, I will discuss our work on weighted matching and assignment in two domains, namely living donor kidney transplantation and provision of services to homeless households. My focus will be on how effective prediction of the outcomes of matches has the potential to dramatically improve social welfare both by allowing for richer mechanisms and by improving allocations.

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