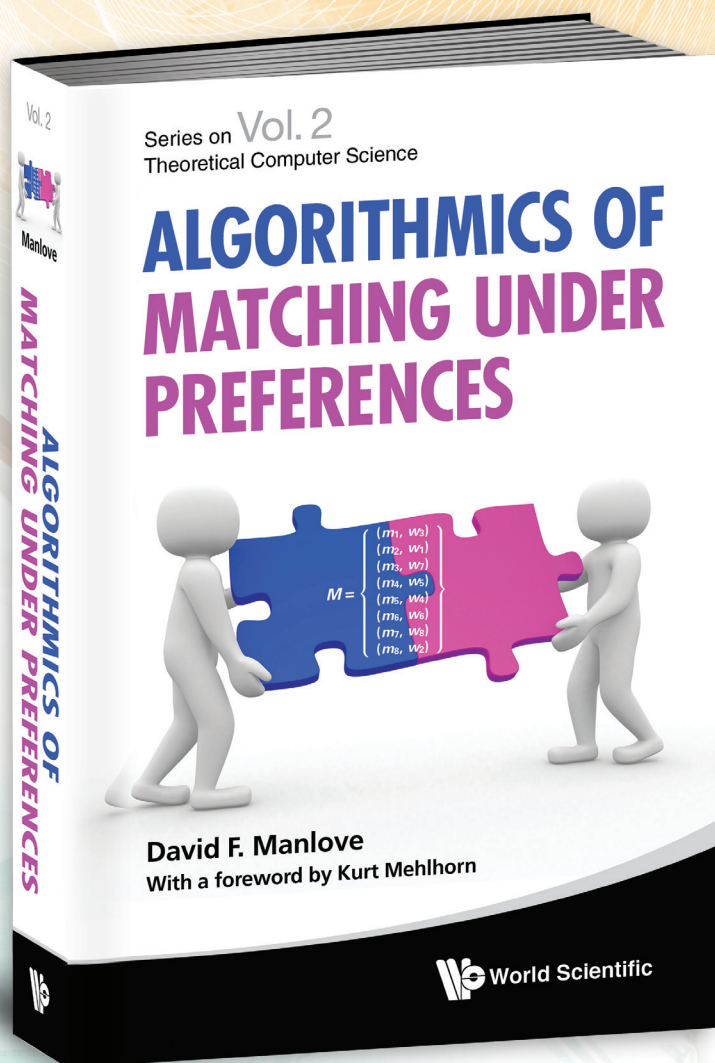


ALGORITHMS OF MATCHING UNDER PREFERENCES

by

David F. Manlove (University of Glasgow, UK)



Matching problems with preferences are all around us: they arise when agents seek to be allocated to one another on the basis of ranked preferences over potential outcomes. Efficient algorithms are needed for producing matchings that optimise the satisfaction of the agents according to their preference lists.

In recent years there has been a sharp increase in the study of algorithmic aspects of matching problems with preferences, partly reflecting the growing number of applications of these problems worldwide. The importance of the research area was recognised in 2012 through the award of the Nobel Prize in Economic Sciences to Alvin Roth and Lloyd Shapley.

This book describes the most important results in this area, providing a timely update to *The Stable Marriage Problem: Structure and Algorithms* (D Gusfield and R W Irving, MIT Press, 1989) in connection with stable matching problems, whilst also broadening the scope to include matching problems with preferences under a range of alternative optimality criteria.

Contents: Preliminary Definitions, Results and Motivation; Stable Matching Problems: The Stable Marriage Problem: An Update; The Stable Marriage and Hospitals / Residents Problems with Indifference; The Stable Roommates Problem; Further Stable Matching Problems; Other Optimal Matching Problems: Pareto Optimal Matchings; Popular Matchings; Profile-Based Optimal Matchings.

Readership: Students and Professionals interested in algorithms, especially in the study of algorithmic aspects of matching problems with preferences.

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About the Author

Dr David F. Manlove is a Senior Lecturer in Computing Science at the University of Glasgow. His research interests lie in the area of algorithms and complexity, with a specific focus on matching problems involving preferences. With respect to this topic he has co-authored over 40 papers and has co-edited a special issue of *Algorithmica*.

Dr Manlove undertook his PhD under the supervision of Dr Rob Irving from 1995–1998 at Glasgow, and thereafter worked with him from 1998–2000 on the EPSRC-funded “Stable Matching Algorithms” project as a postdoctoral research assistant. In October 2000, he was appointed to the academic staff of the School of Computing Science.



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