Forming Project Groups while Learning about Matching and Network Flows in Algorithms (and some thoughts on CS education or the lack of it)

Dinesh Mehta
Colorado School of Mines

Abstract:
The matching problem in bipartite graphs is the basis for many applications that have become especially prominent with the advent of online markets that connect two entities (e.g., job-seekers and employers). Its algorithmic basis is the max-flow problem in networks, a topic that is often covered in introductory algorithms texts and courses. Separately, the Computer Science education literature is abundant with examples which indicate that the quality of the experience in the implementation of programming tasks is enhanced when done in groups. In this paper, we describe the application of a network flow-based matching algorithm in bipartite graphs to form project groups in the algorithms course at the Colorado School of Mines (CSM). This activity simultaneously provides students with an immersive experience in a bipartite matching application. We present a small exploratory study on the effectiveness of the activity.

Bio:
Dinesh Mehta has been on the CSM faculty since 2000, where he is a Professor of Computer Science. Dr. Mehta is a co-author of the text Fundamentals of Data Structures in C++ and co-editor of the Handbook of Data Structures and Applications and the Handbook of Algorithms for VLSI Physical Design Automation. His research interests and publications are in algorithms and data structures, which he has applied to problems arising in VLSI design automation, mobile computing, and cheminformatics.