

Middlebury College
Computer Science Seminar

**Maximizing Happiness and Gender Balance
in First-Year Seminars**
and Other Unexpected Applications of Graph Algorithms

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How does Middlebury optimally assign new students to first-year seminars while balancing student preferences, enrollment limits, and gender balance? How can we segment an image into foreground and background regions with coherent colors and compact boundaries? How can we stitch multiple photographs into a panorama without noticeable seams?

It turns out that all these problems can be phrased as max-flow / min-cut network flow problems, which – unlike many other combinatorial puzzles such as the traveling salesperson problem – have efficient solutions. For instance, the optimal FYS assignment for an incoming class of more than 600 students can be computed in 0.2 seconds. In this talk we will investigate how FYS assignment and other practical problems can be mapped to graphs, and how optimal solutions can be found via efficient algorithms.



Friday, April 13, 2018
12:30 – 1:20 p.m.
McCardell Bicentennial Hall 104
Pizza will be served at 12:25 p.m.

This event is sponsored by Middlebury's Computer Science Department.