Approximation via Doubling

Marek Chrobak
University of California, Riverside

We discuss what we refer to, tentatively, as the "doubling" method for designing online and offline approximation algorithms. The rough idea is to use geometrically increasing estimates on the optimal solution to produce fragments of the algorithm's solution. Although quite a few algorithms can be found in the literature where this idea had been successfully employed, to our knowledge the method has never been explicitely named or identified. We illustrate the applications of the doubling method to designing approximation algorithms for online bidding, the cow-path problem, incremental medians, scheduling on related machines, minimum latency tours, and hierarchical clustering.

This talk is based on joint work with Claire Kenyon-Mathieu from Brown University.