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CS520: Graph theory with applications to computer science, Winter 2015
Project proposal
Due: Mon, Jan/26

I choose Problem 6: Minimum Euclidean Matching in 2D as my propsal.

Statement: What is the complexity of computing a minimum-cost Euclidean matching for 2n points in the plane? The cost of a matching is the total length of the edges in the matching.

Status: Open.

This problem is similar to find a maximum matching in general graphs. The blossom algorithm can find a maximum matching in $O(|E||V|^{1/2})$. However, this problem also requires to finding a minimum cost perfect matching. According to Wikipedia, there is a new blossom algorithm's implementation which can solve it. Also, this problem uses the Euclidean distances as edges, I think we can use this feature to design a new algorithm.