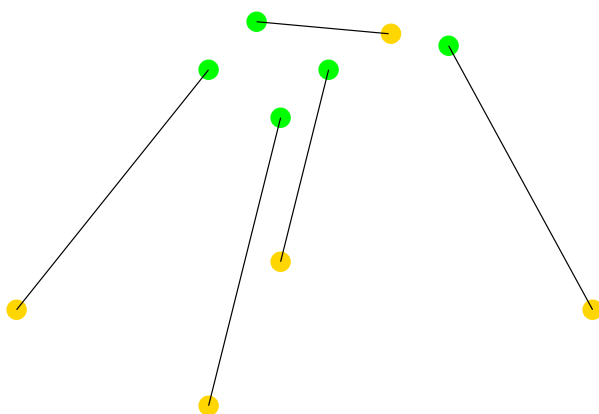


Matching Points
CS 2104 Extra Credit Assignment 3
November 7, 2008
30 points

The Problem. You are given $2n$ points in the plane, no three of which are on a line. I color any n of the points green and the remaining n points yellow. Your goal is to pair up green and yellow points and draw a line segment for each green-yellow pair such that no two line segments intersect. Show, with an algorithm, that you can always meet your goal. Here is an example:



The Assignment. This assignment is optional, that is, for extra credit. It is to be done by a group of two to four students. Grading will be based on group insights into the problem solving process and the quality of the written submission. It is possible for a particularly insightful submission to receive full points, even if it does not fully solve the original problem.

Here are some thoughts to help group discussions.

1. Is there a way to decompose a set of points into smaller sets using the geometry of the set?
2. Develop some notation and terminology for talking about the problem and its solution.

Do not feel constrained by this list. Use your creativity!

Submission. The submission for this assignment must be a prose document that carefully describes the group insights towards a solution to the problem. It is important to reveal the thought processes that the group went through. Your written solution must be uploaded to Blackboard (learn.vt.edu) by 11:00 PM on Friday, November 7, 2008, as a PDF file. Follow the submission guidelines listed below:

1. Each pair of students must submit one PDF file.
2. The name of the file should be labeled:

`last-name-of-student-1_last-name-of-student-2_extracredit-3.pdf`.

For example, for a submission by John Smith and Jane Doe for this assignment, the file name should be `Smith_Doe_extracredit-3.pdf`.

3. Inside the file you should include full names of both partners.
4. Make sure you include the honor pledge.