Final Assignment

given: June 5th, 2000
due: August 14th, 2000

Choose **one** of the following as your final assignment. Submit it directly to me (D.H.) and when you submit it, make sure to fix a time for your oral exam. The exams will be held a few days after the submission of the final assignment and will cover the course material, assignments, and in particular the final assignment.

Assignment F.1 (r) CGAL's arrangements package provides three algorithms for point location: a naive algorithm, a fast one (logarithmic time), and a walk-along-a-line algorithm.
Design a test suite to compare the performance of the different point-location algorithms that will cover different types of input. Conduct experiments with the test suite and report on your findings. The extent of the test suite and the experiments is for you to decide upon. Possible parameters to experiment with are: input size, curve scatter (arrangement density), number representation and types, curve types.
The point-location algorithms were implemented by Oren Nechushtan (~`theoren`). You may consult Oren on the assignment.

Assignment F.2 (r) Given a planar map of segments, surround it with a bounding box and compute the vertical decomposition (v.d. for short) of the map inside the box. The map should be extended to include the v.d. features. Display both the map and the v.d. graphically. Your software should enable to toggle between the original map and the map with the v.d., that is you need to be able to go back to the original map. Provide a detailed written description of your code.

Assignment F.3 (r) Propose and carry out the implementation of a geometric algorithm of your choice. It needs to be a provably robust implementation and the input and output should be displayed graphically if relevant. Provide a detailed written description of your code.
Notice: Your choice here needs to be first approved by me.