

This project concerns the placing of labels on maps so that they do not overlap. The ultimate application is to machine-generated zoomable maps (such as Google maps). We are given:

- a. A set of points in the plane, regarded as fixed (we call them “dots”)
- b. For each point, the width and height of an associated rectangle (regarded as enclosing a textual label; typically  $w \gg h$ )

The task is to find a position for each rectangle, under the constraints that no rectangle may intersect a dot, and no pair of rectangles may intersect. We define an objective function, for example, the maximum distance of any rectangle from its associated dot, and now we have an optimization problem, to minimize the objective function. All evidence is that this optimization problem is computationally hard (has high computational complexity), so we expect to have to tackle it by heuristics. Simulated annealing might be a good starting point. In the easier case, all rectangles keep their sides parallel, but it would be of interest to allow rectangle to rotate too.