

Constraints

1 interpreting line drawing

The simplified model:

1. World is presented in general position, can't change type of vertices by moving view
2. a world that is trihedral, all vertices are connected by three faces
3. Three kinds of lines: concave (-), convex(-), boundary (-i), boundary lines hide one face and concave, convex show both faces.

Boundary lines have arrows based on which way you'd have to walk along it to see the stuff on the right.

In this model, there are 18 ways to arrange a label around a junction.

Ls, forks, Ts and arrows are the type of functions we can have, each with three vertices coming together.

In the new model, we are going to add:

1. cracks
2. shadows
3. Nontrihedral vertices
4. Light

This leads to from 4 to 50+ labels and from 18 to thousands of junctions. To correctly label an object: label each of the vertices, and move backwards and see which of them conflict with our correct label.

2 Search and domain reduction

Graph coloring: problem, unconstrained local constraints cause problems downstream.

Solution: look at local constraints, make sure they can't cause problems downstream.

Vocab:

1. variable v: something that can have an assignment
2. value x: something that can be an assignment

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3. domain d : bag of values
4. constraint c : limit on variable values

procedure For each depth first search assignment:
 for each variable v_i considered
 for each x_i in D_i
 for each constraint $c(x_i, x_j)$ where $x_j \in D_j$
 if $\exists! x_j \ni c(x_i, x_j)$ *satisfied* remove x_i from d_i