

6.871 SPRING 2005
Reading Summary: Lecture 18
Due Tuesday, April 12, 9:35am

Lecture 18: Reasoning about Physical Systems

Please answer the following question in at most one page.

Papers:

Forbus, K. D., Qualitative Physics: Past, Present and Future
Stahovich, Davis, Shrobe, Qualitative Rigid Body Mechanics

1. Forbus paper: One problem with qualitative representations is ambiguity. If I know only that $A>0$ and $B>0$, then I don't know the value of $A-B$. Qualitative simulation has dealt with this by branching, i.e., creating three simulation paths, one for $A-B<0$, one for $A-B=0$ and one for $A-B>0$. In any sizable qualitative simulation the resulting branching soon becomes intractable. What representation techniques have been used to deal with this? That is, what other information about quantities (A, B, etc.) have been used to permit reasoning about the values of qualitative expressions?
2. Stahovich: This paper encounters the same kind of problem, focused in particular on forces. If we know only that force A (below) points right, and force B points left, we don't know whether A will overpower B, or vice versa. What force properties did that paper make use of to overcome this problem? List and briefly describe each.

