

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.

