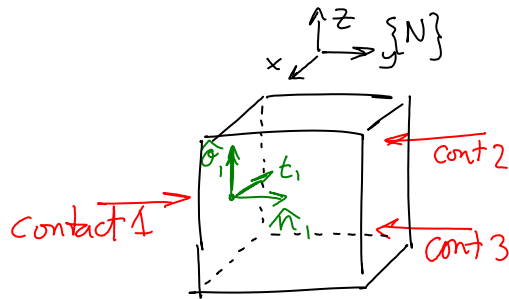


HW-Grasping

Thursday, January 24, 2008
10:49 AM

For cube on right



Given:

$$\hat{n}_1^N = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \quad \hat{t}_1^N = \begin{bmatrix} -1 \\ 0 \\ 0 \end{bmatrix}$$

$$\hat{n}_2 = \hat{n}_3 = \begin{bmatrix} 0 \\ -1 \\ 0 \end{bmatrix} \quad \hat{t}_2 = \hat{t}_3 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

- (A) Determine $G \ni$ the contacts could apply any $g \in \mathbb{R}^6$ and could move to cause any $v \in \mathbb{R}^6$
- (B) Design simple fingers \Rightarrow the hand (with contacts determined in (A)) can command any $g \in \mathbb{R}^6$ and $v \in \mathbb{R}^6$
- (C) Does the grasp have form closure? Why or why not?
- (D) Does the grasp have frictional form closure?
Find finger locations and small $\mu > 0$
 \Rightarrow friction form closure does not exist.
- (E) Does the grasp have force closure?
What changes could you make to the system so that your answer would be reversed?