

Grasping Homework

4/10/18

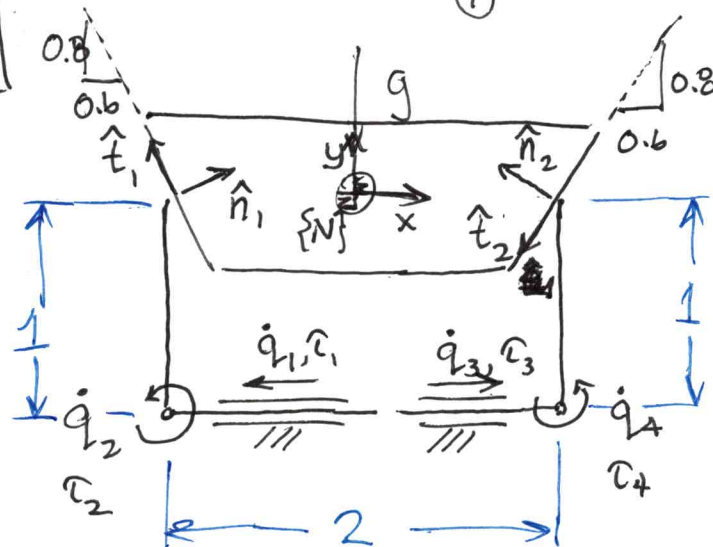
①

[All these problems are planar!]

- 1.) A hand with 4 joints \rightarrow grasps a quadrilateral.

[SHOW YOUR WORK!]

A.) Construct G and J
assuming HF contacts



$$\mu_1 = \mu_2 = \frac{2}{3}$$

B.) Give a basis for all
4 fundamental subspaces
of each of G & J .

C.) Does the grasp have form closure?

D.) Does this grasp have friction form closure?

E.) Does this grasp have force closure?

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F.) Give an example v of the
object that cannot be achieved
by choice of \dot{q} .

②

G.) If μ is reduced to 0.5, there ~~are~~
are different values of τ that can
balance $g = [0 \ -1 \ 0]^T$. Give two
possible solutions:

- i) Maximum internal force.
- ii) Minimum internal force.

H.) Keeping contact point 1 fixed on the object,
find a range locations for contact point 2
such that if contact 2 is at any point in
that range, the grasp will have frictional
form closure. Assume $\mu_1 = \mu_2 = 1$.

