CSci 8980
Project - Stick Solo
Update

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description Generate controller for stick-figure agents for the task of rock climbing. Everything 2D.

quick terminology NR chain: A serially connected N edges with controllable joint angles. Has N links, N joint angles (q_is), N + 1 vertices.

baseline

1. Gradient descent.
$$\Delta q \equiv \frac{\delta(goal - end)^2}{\delta q}$$
2. No constraints on q_is.
3. No constraints on Δq_is.
4. No center of mass considerations.
5. No multi-limb coordination.

new

1. Constraints on q_is.
2. Constraints on Δq_is.
3. Center of mass considerations.
$$\Delta q \equiv \frac{\delta(goal - end)^2}{\delta q} + \frac{\delta(com_x - com_{x\_goal})^2}{\delta q} + \frac{\delta com_y}{\delta q}$$
4. 4R as 2 limb. Therefore inherent limb coordination.
5. Constraints on q_i causes local minima problems with gradient descent.
6. Solution:
   (a) Matching hands.
   (b) Relaxing agent (or) Global optimal solve using monte carlo method. No prior vs Prior.
7. All asymptotically solve the problem.

next steps

1. Join two NR chain.
2. Formulate it as RL problem.