Equilibrium-Point Control

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You can find more information following the next links:

- Wiki page **formatting** : HowTo - Wiki-Format
- Creation of a **video-podcast** HowTo - Podcast

Introduction/Motivation

Basic EP-concept (EP = Equilibrium point)

- The EP-Control System states, that a set of two actuators can act like a human muscles Agonist/Antagonist principle.

- The applied force depends on muscle length and stimulation: The longer the artificial muscle, the more effective the stimulation in translated into force

- The system is heading towards a certain joint angle depending on the realation of force and length of both actuators

- Once the angle is reached, the joint stiffness can be modified by equally increasing or decreasing the applied forces in the actuators.

- In our experiment, the used software defines sitffness and angle of the models joints which are automatically are translated in poses. Each of these poses define an Equilibrium Point

Podcast

Movement approaches via poses:

- The first set of poses was designed to be as detailed as possible and utilized every possibly relevant angle

- The second set only used simple movement patterns. The more complex movements then resulted from the passive mechanics of the muscle system

Resulting movement:

- the first set of poses result in failure due to loss of balance

- the second set shows a good result even without specific modelling

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Summary

At the end, three conclusions were reached:

1. The system is able to head towards a target position without the need for an inverted model

2. Using rough and simple movement patterns looks more natural and is more stable

3. A comparison between both approaches rises the question whether biological movement is also just a product of simple, prototypical poses instead of detailed motions

References

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