

Implementing 'Discomfort' in Operational Space: Practical Application

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Abstract

The Operational Space formulation has been applied to a practical robot system in order to generate realistic human reaching motion. In order to make the controller suitable for real world application we have improved the performance of the 'Task controller' using a Sliding Mode element and implemented joint limits as part of the null-space 'effort'. In conclusion, a robot controller based on the operational space formulation has successfully produced human motion in simulation by use of decoupled task-level controllers and minimal effort posture control. We have modified the operational space formulation to improve the practical application by inclusion of joint limits as a function of effort; this is analogous to the discomfort felt by humans when approaching joint limits.