

Efficient Numerical Methods for Optimal Control in Robotics

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Keywords : Optimal Control, Direct Methods, Multiple Shooting, Time Optimal Control

We review state-of-the-art optimal control methods and their application to control of robot movements. In particular, we discuss the direct multiple shooting method [1] that has proven successful for optimal control problems in ODE [1] and DAE [2] that are characterized by nonlinearity, instability, and path and multipoint constraints, as they typically arise in robotics. We demonstrate the performance of the methods at examples comprising the time optimal control of an industrial robot [3].

References

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