Poster Session II

Nonlinear loudspeaker compensation through embedded convex optimization

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Abstract

In this poster, a novel nonlinear loudspeaker compensation technique is presented which is based on embedded convex optimization. The aim is to compensate for the linear as well as for the nonlinear perceptible distortions incurred in the loudspeaker. To this end, a psychoacoustic model is adopted and a convex optimization based problem formulation is set up. In order to solve the resulting convex optimization problems in a fast and reliable way, a projected gradient optimization method is proposed. From comparative objective evaluation experiments, it is concluded that the proposed nonlinear loudspeaker compensation technique indeed improves the average audio quality scores.

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Time-Optimal Path Following for Robots with Convex-Concave Constraints using Sequential Convex Programming

Frederik Debrouwere, Wannes Van Loock, Goele Pipeleers, Tran Dinh Quoc, Moritz Diehl, Joris De Schutter and Jan Swevers (KUL)

Abstract

Time-optimal path following considers the problem of moving along a predetermined geometric path in minimum time. In the case of a robotic manipulator with simplified constraints a convex reformulation of this optimal control problem has been derived previously. However, many applications in robotics feature non-convex constraints. We propose an efficient sequential convex programming (SCP) approach to solve the corresponding non-convex optimal control problems by writing the non-convex constraints as a difference of convex (DC) functions, resulting in convex-concave constraints.

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