A measure-theoretical approach for solving discrete optimal control problems

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Abstract

In this paper, a new approach for finding an approximate solution for discrete optimal control problems is introduced. In this method the problem is transformed to a continuous optimal control problem whose solution may give rise to a good approximate solution for the original problem. Then, a measure-theoretical approach is applied to solve the new problem. The method is extended to solve time-optimal problems which is governed by a nonlinear discrete system. Finally, some numerical examples are proposed.

Keywords: Discrete optimal control; Measure theory; Linear programming

1. Introduction

Although several techniques have been developed for continuous nonlinear systems, there has been little discussion on discrete nonlinear systems. Even in

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