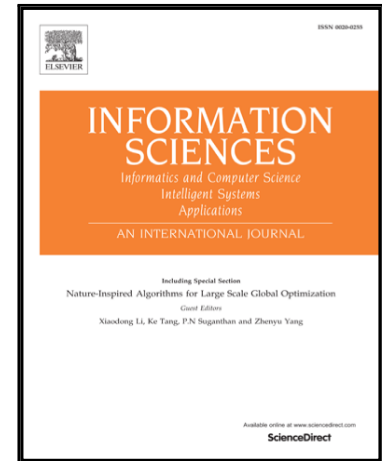


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# Information filtering and array algorithms for discrete-time Markovian jump linear systems subject to parametric uncertainties

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## Abstract

In this paper we present robust information filters for discrete-time Markovian jump linear systems subject to uncertainties in the parameters. We provide recursive estimations to deal with jumps, uncertainties, and unknown initial conditions of the Markovian states. The difficulty in defining initial conditions for this class of systems where the Markov chain is also unknown, justifies the use of information type filters. As an alternative computation method we develop array and fast array algorithms to estimate these uncertain informations. We present numerical examples to demonstrate the effectiveness of the array algorithms proposed. We present also simulation results related with the application of the robust information filter to solve mobile robot localization problems.

## Index Terms

Robust estimation, array algorithm, information filter, Markovian jump, discrete-time, mobile robot.

## I. INTRODUCTION

Kalman filtering for discrete-time Markovian jump linear systems (DMJLS) has been a topic intensively studied in the last years, see for instance [1]–[6], [16]–[19], [23], [25], [26], [27]. An

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