Michaela Horváthová <michaela.horvathova@stuba.sk>

Acknowledgement of submission of Regular Paper 1094 for CDC 2025

1 správa

PaperPlaza: The IEEE Control Systems Society Conference, Journals, Award Management System <paperplaza@paperplaza.net> 31. marca 2025 o 22:28
Komu: michaela.horvathova@stuba.sk
Kópia (Cc): juraj.holaza@stuba.sk, yuning.jiang@ieee.org, juraj.oravec@stuba.sk

Message from PaperPlaza: The IEEE Control Systems Society Conference, Journals, Award Management System

To: Ms. Michaela Horváthová Re: Submission No. 1094, "Variance-Adaptive Approximated Model Predictive Control", by Michaela Horváthová*, Juraj Holaza, Yuning Jiang, Juraj Oravec

Dear Ms. Michaela Horváthová,

This email is to acknowledge receipt of your submission to the 2025 64th IEEE Conference on Decision and Control (CDC) to be held in Rio de Janeiro, Brazil.

Attached below are relevant data on your paper for you to verify. If there is any error or necessary change, please update your data at the following site:

http://css.paperplaza.net

If you submitted a proposal for an invited session, please send the session code below to the prospective contributors so that they can reference it with their paper submissions.

Should you need to modify the title or author list of your paper, you will have this opportunity when submitting the final version for publication in the proceedings.

For any correspondence regarding your submission, be sure to refer to your paper ID.

Please note that the acknowledgement is sent only when the paper is first submitted. If you upload a revised version, you will "not" receive another acknowledgement. It is the responsibility of the corresponding author to keep the co-author informed about any updates.

Thank you for your submission.

Na Li and Christoforos Hadjicostis
CDC 2025 Program Chair

Manuscript data
==
Submission number: 1094
Authors or proposers names and PINs:
Michaela Horváthová (142580), Juraj Holaza (94784), Yuning Jiang (106041), Juraj Oravec (94884)

Corresponding author or proposer:
Michaela Horváthová, michaela.horvathova@stuba.sk

Title:
Variance-Adaptive Approximated Model Predictive Control

Date submitted: March 31, 2025
Type of submission: Regular Paper
Status: Received
Award candidate: None
Keywords:
Predictive control for linear systems; Flight control;
Randomized algorithms
Profile:
Regular Papers

Abstract:
This paper presents a library-free, approximated Model Predictive Control (MPC) for systems with fast dynamics and limited computational resources. Conventional MPC relies on optimization solvers, which can be computationally demanding and often require commercial solver licenses, making them less suitable for embedded systems. The proposed approach replaces solvers with a procedure that samples a set of control sequences from a multivariate normal distribution. The samples are evaluated for primal feasibility, and the best-performing suboptimal sequence is applied. Two enhancements- variance-decaying and variance-adaptive methods- are introduced to direct the sampling procedure towards promising regions of the feasible solution space. The variance-adaptive approximate MPC is designed to increase response to disturbances. The closed-loop stability of the proposed approaches is guaranteed by introducing a support controller that also ensures recursive feasibility, even in the presence of disturbances. In addition to being solver-free, the proposed methods exploit the MPC problem while introducing additional degrees of freedom that balance disturbance rejection, computational complexity, and control performance. The performance of these methods is validated on a multivariable quadrotor model, and the results demonstrate that the proposed approaches offer a valid solver-free alternative even in the presence of disturbances.

==

You uploaded the file root.pdf

Log in at https://css.paperplaza.net/conferences/scripts/start.pl using your PIN 142580 and password to check the status of your submission

You may update or re-upload your submission until the submission deadline March 31, 2025 after logging in with your PIN and password

If you do not have your password then follow the link https://css.paperplaza.net/conferences/scripts/pinwizard.pl to retrieve it

---

CDC25_Commitment_1094.pdf
4K