# Design of Delay Independent State Feedback Control for Roll-to-Roll Printing Applications

Article


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## Publication Information

Conference: ASME 2014 Dynamic Systems and Control Conference
Volume 3, October 22, 2014



## Abstract

Control of print quality (registration) in roll-to-roll (R2R) printing is challenging because of the presence of transport delays involved in the printing process. In this work we present a delay-independent state feedback control design to stabilize a R2R printing press by considering all the significant dynamics involved in the printing process. State feedback control design using past state measurements (controllers with memory) are discussed first. Since controllers with memory are less desirable in industrial applications, we investigate and discuss the feasibility of designing a simple, memoryless, delay-independent state feedback controller for printing applications. The feasibility is shown by the use of a control design procedure that exploits the structure information in the system matrix to find a stabilizing controller. The design procedure is also extended to other common industrial R2R control strategies, such as decentralized control and state feedback with integral action for R2R printing applications.


Link to the Article