International Federation of Automatic Control

Invites you on
Tuesday, 18 January 2022
at 11:00 am

to the lecture

“High-performance nonlinear control method for servo systems in automation and robotics: theory to practice”

Speaker:
Prof. Dongil “Dan” Cho, Ph.D.
IFAC President-Elect

The lecture will take place via
Zoom video conference.
LINK will be distributed after registration.

Please RSVP to:
IFAC SECRETARIAT
https://www.ifac-control.org/survey/index.php/992246?lang=en

Abstract

“High-performance nonlinear control method for servo systems in automation and robotics: theory to practice”

by Dongil “Dan” Cho, Ph.D.
Professor, Department of Electrical and Computer Engineering,
Seoul National University
Member, National Academy of Engineering of Korea,
Seoul, Rep. of Korea

High-performance servo controllers are very important in modern robotics and automation systems. Most common control methods are based on the of classical control techniques, but they demand much tuning from experienced engineers. Furthermore, controllers that are specifically tuned for given tasks do not perform well under varying operating conditions. Over the years, we have developed a robust recursive discrete-time sliding mode control method integrated with a novel decoupled disturbance observer and a novel saturation compensator. It is shown that the desirable properties of invariance, finite convergence, and robustness to external disturbances and parametric uncertainties of the continuous-time sliding mode control method can be preserved in the discrete time. Our developed control method has been applied to a plethora of robotics and automation systems to provide greatly improved performance for wide ranges of varying operating conditions without the typical arduous tuning process. This talk will show the development of the control method, as well as the processes that were involved in successful industrial implementations.

Program

11.00	**Introduction** Dr. Dimitri Peaucelle (FR) IFAC Secretary, VP Operations
11.05	**High-performance nonlinear control method for servo systems in automation and robotics: theory to practice** **Speaker:** Prof. Dongil “Dan“ Cho, Ph.D. IFAC President-Elect Seoul National University
11.45	**Discussion/Q&A** Moderation Dr. Dimitri Peaucelle