Nonlinear Control Theory

09:00-10:00

Chair: Oh Jun-Ho (KAIST)
Co-Chair: Lim Myo-Taeg (Korea Univ.)

09:00 - 09:20
D-SA04-1
On Stability of Discrete Time Nonlinear Systems with Slow-in-the-average Time Varying Inputs
Y. S. Shin, J. T. Lim
(KAIST)

In this paper we show the stability analysis of the discrete nonlinear system with average bounded variation of the input. This is the discrete counterpart of that continuous one. We use the Lyapunov stability to prove the boundedness of the steady-state error. Also the allowable maximum variation bounds and the region of attraction are given as the function of the system parameters. Moreover, we prove the uniform convergence for the constant input.

09:40 - 10:00
D-SA04-3
Dynamic Feedback Linearization of Nonlinear Discrete-Time Systems with 2 Inputs
Cho Hyung-Joon, Ryu Dong-Young, Park Se-Yeon Lee Hong-Gi
(Chung-Ang Univ.) and Kim Yong-Min(Choongchung Univ.)

In this paper, the analysis of nonlinear systems with 2 inputs is using the restricted class of dynamic feedback. That is, this paper is the discrete version of [2]. The results we obtain for discrete-time nonlinear systems are, however, quite different from that of continuous-time case.

10:20 - 10:40
D-SA04-5
Target Motion Analysis for Active/Passive Mixed-Mode Sonar Systems
Lim Young Taek and Song Taek Lyul
(Hanyang University)

Target Motion Analysis(TMA) for Passive Sonar Systems with bearing-only measurements needs to enhance system observability to improve target tracking performance by ownership maneuvering. However, tracking problem incurred by weak observability result in slow convergence of the target estimates. On the other hand, active sonar systems do not have problem associated with system observability. However, it drawback related to system survivability. In this paper, the algorithm that could be used in Active/Passive Mixed-Mode Sonar Systems is proposed to analyze maneuvering target motion and to improve TMA performance. The proposed TMA algorithm is tested by a series of computer simulation runs and the results...