



The Center for Control, Dynamical Systems, and Computation
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Presents

Separation Principle for a Class of Nonlinear Feedback Systems Augmented with Observers

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Abstract:

This presentation suggests conditions for presence of quadratic Lyapunov functions for nonlinear observer based feedback systems with an “input nonlinearity” in the feedback path. Provided that the system using state feedback satisfies the circle criterion (i.e., when all states can be measured), we show that stability of the extended system with output feedback control from a (full state) Luenberger-type observer may be concluded using the circle criterion. As another result, we state a separation principle for a class of feedback systems with an input nonlinearity. When only local stability results can be stated, our method provides an estimate of the region of attraction.

About the Speaker:

Rolf Johansson received the Master-of-Science Degree in Technical Physics in 1977, the Bachelor-of-Medicine Degree in 1980, the Doctorate in Control Theory 1983, was appointed Docent in 1985, and received the Doctor-of-Medicine Degree (M.D.) in 1986, all from Lund University, Lund, Scandinavia. He is member IEEE; fellow of the Swedish Society of Medicine; and fellow of the Royal Physiographic Society, Section of Medicine. Since 1986 he has been with the Department of Automatic Control at Lund University, where he is currently Professor of Control Science. In his scientific work, he has been involved in research in adaptive system theory, mathematical modeling, system identification, robotics and signal processing. Since 1987, he has also participated in research and as a graduate advisor at the Faculty of Medicine, Lund University Hospital.
