NON-LINEAR CONTROL FOR UNDERACTUATED MECHANICAL SYSTEMS (COMMUNICATIONS AND CONTROL ENGINEERING)

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Furuta's Pendulum: A Conservative Nonlinear Model for Theory and Practise

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Non-linear control for underactuated mechanical systems (Book,) [rudiqogy.tk]

Non-linear Control for Underactuated Mechanical Systems (Communications and Control Engineering) [Isabelle Fantoni, Rogelio Lozano] on rudiqogy.tk

Non-linear Control for Underactuated Mechanical Systems (Communications and Control Engineering) by Rogelio Lozano. Rogelio Lozano; Published

Non-linear Control for Underactuated Mechanical Systems. (Communications and Control Engineering) by Rogelio Lozano. This book deals with the application.

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In Figure 7 we show a successful experiment, where in the top figure we show the time histories of the position and the velocity of the pendulum and, in the bottom figure the time histories of the control input. We reproduce, and comment briefly, here Figure 6 from [57], where the results of the experiments were collected. However,remindthatthesystemhastwodegreesoffreedomsandjustoneactua This technique was a step ahead after the development of the well-known State Feedback Linearisationwhich linearises the state of the system from the control input through a non-trivial change of coordinates and control. In Figure 4 we show how the added torque compensates the friction. Themodelusedforthedesignwas2.Furuta's pendulum has been an excellent benchmark for the automatic control community in the last years, providing, among others, a better understanding of model-based Nonlinear Control Techniques. Thus, to derive the

Euler-Lagrange equations we calculate the Lagrangian of the system as the difference between the kinetic and potential energies of the whole system from equations 2.