Abstract

In this paper, robust controller is developed by using H8 controller to improve the performance of the Inverted Pendulum. In this paper, introduced a controller by combining the classical PID, the fuzzy controllers and H8 controller and thus a new controller has been achieved. The simulations done on inverted pendulum using the new H8 fuzzy PID controller provides better system responses in terms of transient and steady-state performances when compared to the pure classical PID or the pure fuzzy controller applications.

References

- J. Lam, “Control of an Inverted Pendulum”, University of California, Santa Barbara, 10 June 2004.
- Yanmei Liu and Zhen Chen, Dingy Xue, Xinhe Xu “Real-Time Controlling of Inverted Pendulum by Fuzzy” Proceedings of the IEEE International Conference on Automation and Logistics Shenyang, China August 2009


Marzi Hosein, “Fuzzy Control of an Inverted Pendulum using AC Induction Motor Actuator” IEEE International Conference on Computational Intelligence for Measurement Systems and Applications La Coruna - Spain, July 2006


Songmoung Nundrakwang, Taworn Benjanarasuth, Jongkol Ngamwiwit and Noriyuki Komine, “Hybrid Controller for Swinging up Inverted Pendulum System”, ELITE, CMS, 2005


Katsuhiko Ogata “Modern control Engineering" university of Minnesota, prentice hall, Upper Saddle River. New Jersey 07458


Theory of Robust Control by Carsten Scherer Mechanical Engineering Systems and Control Group Delft University of Technology the Netherlands


Yasunobu Seiiji and Yamasaki Hiroaki, “Evolutionary Control Method and Swing Up and Stabilization Control of Inverted Pendulum”, Joint 9th IFSA World Congress and


Ben M. Chen, Robust and H8 Control, Springer-Verlag, 2000.


Hosein Marzi “Fuzzy Control of an Inverted Pendulum using AC Induction Motor Actuator” IEEE International Conference on Computational Intelligence for Measurement Systems and Applications La Coruna - Spain, 12-14 July 2006

Zhao Yang, Xiao Xiangning, Member, IEEE , Xudong Jia “Nonlinear PID Controller of H-Bridge Cascade SSSC Top Level Control” DRPT2008 6-9 April 2008 Nanjing China.

Lin Wang, Shifu Zheng, Xinping Wang and Liping Fan “Fuzzy Control of a Double
Inverted Pendulum Based on Information Fusion” International Conference on Intelligent Control and Information Processing August 13-15, 2010 - Dalian, China
- Meysam Ghanavati, Vahid Johari Majd and Malek Ghanavati “Control of Inverted Pendulum System by using a new Robust Model Predictive Control Strategy” 2011 International Siberian Conference on Control and Communications SIBCON.

Index Terms

Computer Science Applied Sciences

Keywords

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