IIM> Vol.2 No.1, January 2010

OPEN ACCESS

A New Approach to Intelligent Model Based Predictive Control Scheme

PDF (Size:607KB) PP. 14-20 DOI: 10.4236/iim.2010.21002

Author(s)

A. H. MAZINAN, M. F. KAZEMI

ABSTRACT

This paper describes a new approach to intelligent model based predictive control scheme for deriving a complex system. In the control scheme presented, the main problem of the linear model based predictive control theory in dealing with severe nonlinear and time variant systems is thoroughly solved. In fact, this theory could appropriately be improved to a perfect approach for handling all complex systems, provided that they are firstly taken into consideration in line with the outcomes presented. This control scheme is organized based on a multi-fuzzy-based predictive control approach as well as a multi-fuzzy-based predictive model approach, while an intelligent decision mechanism system (IDMS) is used to identify the best fuzzy-based predictive model approach and the corresponding fuzzy-based predictive control approach, at each instant of time. In order to demonstrate the validity of the proposed control scheme, the single linear model based generalized predictive control scheme is used as a benchmark approach. At last, the appropriate tracking performance of the proposed control scheme is easily outperformed in comparison with previous one.

KEYWORDS

multi-fuzzy-based predictive control approach, multi-fuzzy-based predictive model approach, intelligent decision mechanism system

Cite this paper

A. MAZINAN and M. KAZEMI, "A New Approach to Intelligent Model Based Predictive Control Scheme," *Intelligent Information Management*, Vol. 2 No. 1, 2010, pp. 14-20. doi: 10.4236/iim.2010.21002.

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