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International Journal of Computer Applications
© 2015 by IJCA Journal

Volume 122 - Number 23

Year of Publication: 2015

Authors:

D. K. Chaturvedi

Tanveer Qamar

O. P. Malik

10.5120/21869-5210

{bibtex}pxc3905210.bib{/bibtex}

Abstract

This paper deals with comparison of artificial neural network and quantum inspired evolutionary neural network control of an inverted pendulum. First, a properly tuned PID controller was utilized to stabilize the inverted pendulum to generate the training data. Secondly, a feed-forward neural network was trained on the basis of these data. Thirdly, a quantum genetic algorithm optimized neural network was developed. If a disturbance occurs in the system, the controllers counteract this disturbance and balance inverted pendulum. All these three schemes are tested and compared. The results establish that the quantum genetic algorithm neural controller has the best control action.

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Index Terms

Computer Science

Artificial Intelligence

Keywords

Quantum GA ANN Inverted Pendulum Control Adaptive Control Nonlinear system control Neural Control

