

Adaptive Control On Inverted Pendulum for Teaching Factory Learning Media

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ABSTRACT

Inverted pendulum is a basic control system with many applications found in the field. Inverted pendulum has an indeterminate and unstable properties. Given these properties, an inverted pendulum requires a robust adaptive control system and can adapt to its environmental conditions. To solve the above problem, fuzzy logic is chosen as an adaptive control system in inverted pendulum. Fuzzy logic which is applied in this research using direct and indirect adaptive control method. This research is designed using mathematical model and stability testing of its control system using lyapunov theory. This test is performed to ensure that the designed control system does have zero errors. Furthermore, once a control system is created, the system is used and tested as a learning medium for adaptive control techniques. The output of this research is in the form of adaptive control system in inverted pendulum, instructional media and international seminar paper.

Kata Kunci: inverted pendulum, adaptive control, fuzzy logic, instructional media.