Balancing Humanoid Model By Using GA- Optimized PID Control Technique[*]

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Abstract

The goal of this study is to model human body correctly, according to the principles and the standards used to calculate the humanoid parameters. The model is built by using VN software and then it was implemented in Matlab Simulink, in order to build a control system for simulating the humanoid balance during standing. Precise and robust balance was reached by using PID controller with parameters optimized by using genetic algorithm (GA). The control performance was tested by applying external disturbance to the humanoid, the results show that the humanoid can retrieve its balance effectively.

Keywords: Human Body Model, Gait Cycle, Swing Phase, Degree of freedom, PID Controllers, Genetic Algorithm, Chromosome, Mutation.

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