

Gait generation methods for Stable Walk of Biped Robot

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Abstract:

Gait generation methods for stable walk of flat footed and toe footed biped robot models are presented. Methods are proposed to generate suitable trajectory, which can easily adapt the changes in the boundary conditions/ constraints during walk. Different types of approaches such as polynomials and Feedforward Neural Network (FNN) are considered for some biped models walking.

Neural Network (NN) is known for its efficiency in approximating nonlinear continuous functions. NN is directly used to generate a trajectory for the given boundary conditions of the biped robot without assigning any path in advance. As the trajectories of feet, hip and upper body of a walking biped are complex, nonlinear and continuous functions during one step, we developed a NN based method for generating these trajectories. Dynamic stability is studied using Zero Moment Point (ZMP) criteria along with the movements of upper body. The proposed algorithm is implemented using MATLAB software.



Biography:

Dr. Ruchi Panwar has completed her PhD in 2019 from IIT Roorkee, Roorkee. She is Assistant Professor in Department of Mathematics, GD Goenka University. Her areas of research include Robotics, Biped Robot and Neural Network.

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