

## GRAPHICAL ANALYSIS OF PASSIVE DYNAMIC BIPED ROBOT

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### ABSTRACT

It is simple for humankind to steadily walk on different terrain, but it is hard to achieve a human-like gait for bipedal walking robots due to their complex dynamics. In general, there are two approaches towards controlling a biped robot: static and dynamic walking. In this paper, we demonstrate the dynamic walking approach for controlling a biped robot. In this approach, the walker moves only under the gravitational force. The loss energy of during the walk will recover only by the gravity. The walker will have a stable gait over the course of several steps for that reason there is no need for PDBR to be stabilized in each of its steps. It can stably walk over a gentle slope. In this paper, we explain the steps of mathematical modeling which analogues to a double inverted pendulum, the impact equations for heel-strike and the stepwise analysis of walking of a passive biped. This paper shows the graphical approach to analysis the symmetric gait for the linear model of passive dynamic bipedal robot (PDBR).

**KEYWORDS:** Biped Robots, Passive Walking, Linearization, Switched Conditions, Compass Gait