

Abstract

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One of the most challenging areas of robotics research is the design of bipedal walking robots. Many different kinds of walking machines have been designed and have been approached from distinct perspectives using various methodologies. The biggest difficulty in the design of these machines is the way to keep balance on just two legs.

This thesis is divided into two parts. The first part presents a conceptual design of a walking biped robot (twin arms, and bipedal legs). A prototype was designed, fabricated and tested. The robot had a height of 840mm and a shoulder-to-shoulder width of 425mm. Average speeds of 12.31mm/s and 15.23mm/s were recorded for manual and computer controls respectively. The robot also possessed turning ability. Times recorded average between a minute to a minute and a half.

The second part presents a mathematical model that was developed for determining the stability force requirements for a biped robot standing on one leg. Theoretical values were computed using the equations developed.

Keywords: Deosaran Boodoram, biped, walking robot, mathematical model.