

足球机器人角度优化控制软件设计

李宁

(青岛大学, 山东 青岛 266000)

摘要: 针对当前足球机器人角度控制软件存在控制精度低, 控制及时性较差的问题, 设计了一种足球机器人角度优化控制软件.根据足球机器人踢球过程中的等压效应确定机器人关节输出扭矩, 构建机器人关节动力学方程, 实现对机器人关节角度控制.引入质心的雅可比矩阵, 确定机器人关节角度控制校正量, 根据校正量, 对足球机器人关节角度控制结果进行优化, 实现足球机器人角度的优化控制.实验结果表明, 所设计软件对足球机器人角度控制的精确度较高, 且控制的及时性较好.

关键词: 足球机器人; 角度; 优化控制; 关节

Software Design of Angle Optimization Control for Soccer Robot

LIN Ning

(Qingdao University, Qingdao 266000, China)

Abstract: Aiming at the problems of low control precision and poor control timeliness in the current soccer robot angle control software, a soccer robot angle optimal control software is designed. According to the isobaric effect of soccer robot, the output torque of robot joint is determined, the dynamic equation of robot joint is constructed, and the angle control of robot joint is realized. The Jacobian matrix of the center of mass is introduced to determine the robot joint angle control correction. According to the correction quantity, the results of the soccer robot joint angle control are optimized to realize the soccer robot angle optimal control. The experimental results show that the designed software is accurate for the angle control of soccer robot. Higher, and the timeliness of control is better.

Key words: Soccer robot; Angle; Optimal control; Joint

作者简介:

李宁男, (1970-), 硕士, 讲师.研究方向为运动科学教学与训练.

E-mail: 15210555101@163.com.