

障礙式軌道競賽機器人之研發設計與製造

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摘要

障礙式軌道競賽機械人之比賽由教育部所主辦，國立雲林科技大學、財團法人 TDK 所承辦。在機械方面為運用 CAD/CAE/CAM 互相配合設計與製造而成，為了能清楚的了解所面對的問題，我們首先採用物我一體類比法(personal analogy)[1]，假設自己是機器人，設身處地的思索機器人在比賽過程必須做的動作與突破的障礙，得到機器人位移及動作。將構想轉變成實體，用 Solid Works 2006 建構機器人實體模型，接著利用 Working model 模擬機器人的速度和動作，最後使用 Master CAM 配合 CNC 綜合切削加工機及傳統加工機具來製作機器人實體。電機控制部份主要在於控制四個直流減速馬達的正轉與反轉以及速度的控制，為了操控方便採用無線遙控方式進行操控，避免因機器人托著一長串的控制線而引起平衡不良以及動作受侷限等問題。

關鍵字：障礙式軌道競賽機械人；組合邏輯

Research and Development Design and Manufacture of the Obstacle Type Track Contest Robot

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Abstract

Research and development design and manufacture of the obstacle type track contest robot, this match is sponsored by institute of Ministry of Education, the University of Science and Technology of state-run cloud and forest, legal person TDK of the financial group undertake. Succeed for using CAD/CAE/CAM to cooperate and design and make each other in machinery, for question that understanding face that is can clear, we adopt integrative simulation law, I of thing, at first (personal analogy) "1", Suppose oneself is a robot, the thinking robot seeing things as one would if he were in someone else's place is matching the obstacles of movement and break-through that the course must be done, receive robot displacement and movement. Will conceive and change into an entity, will build and construct entity's model of the robot with Solid Work 2006, then utilize Working model to imitate the speed and movement of the robot, use Master CAM to cooperate with CNC to cut processing machine and tradition and process the machines to make robot entity synthetically finally. The electrical machinery controls transferring to and overturning and control of the speed lying in controlling four pieces of direct current to moderate the motor mainly partly, for control convenient to adopt wireless remote control way is it control to go on, is it is it balance badly to cause by that the robot is holding one long bunches of control lines to avoid and movements receive such issues as the limitation,etc..

Key words: Obstacle track contest robot;Combinational logic