

# 全方位足球機器人之路徑規劃模組設計\*

## Design of a Path Planning Module for Omni-direction Soccer Robot

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**摘要：**本論文以FIRA聯盟之中型足球機器人的路徑規劃策略為研究主題，設計了一套模擬器系統來驗證策略端的路徑規劃與避障等功能。由於足球機器人之取像易受光源及環境影響，機構參數設定相對繁複，行進時之場地需求也大；因此我們將相關工作切割為軟體演算法設計與實際機體控制兩個大項目，在實作之前先透過模擬系統進行軟體端之演算法的設計與規劃；設計完成後，再進行實際機體的移植與驗證。這種獨立分開設計與測試的作法除了有利於快速開發各種避障與路徑規劃演算法外，也可以協助我們在機體運作出錯時很容易找出問題所在，便於除錯、修改與維護。

**關鍵詞：** FIRA聯盟、足球機器人。

**Abstract:** The goal of this paper is to find a strategy for the FIRA RoboSot's path planning, design a emulation system for the RoboSot and verify the validity of strategy in path planning and obstacle avoidance. Due to the images fetched by the RoboSot may be easily affected by light around the environment, the parameter settings of the robot are relatively complicated, and large space is required for the robot. Hence, the related work is divided into two parts: software algorithms design and the RoboSot control. We develop the simulation system to implement the algorithm. After the designing and testing, the algorithm will be transplanted and verified in the RoboSot. This independent designing and testing method can be used to rapidly develop a variety of obstacle avoidance and path planning algorithm. Moreover, the simulation system is easy to debug and modify and maintain in the RoboSot implementation.

**Key words:** FIRA ; RoboSot

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