基于**Elman**超声信号时间融合的塔机防碰撞技术

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摘　要：

针对塔机防碰撞以缺乏灵活性和时实性的被动防御为主的现状，为实现智能化主动防碰撞的目的，笔者通过分析障碍物轮廓与超声测距时间序列间的映射关系，以时间融合的思想引入Elman网络，并通过变形输入输出实现了单超声传感器由测距序列快速识别障碍物高精度位置信息的功能，并经试验验证可以达到预期低成本、快速度、高精度的塔机工作使用要求，也为低精度传感器获取高精度融合结果提出借鉴思路。

关键词：Elman神经网络；塔机；防碰撞；时间融合；超声传感器

Anti-collision of Tower Crane via Ultrasonic Elman Fusion

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Abstract:

Aiming at intelligent active anti-collision, to better improve the passive security model of tower crane which lacks flexibility and simultaneity, this paper analyzes the mapping mode between obstacle's outline and ultrasonic distance measurement time series, combined with the Elman network in time fusion, and created a practical mode that applies singular ultrasonic sensor to rapidly identify the precise position data by distance sequence through deformed input/output, which has been experimentally verified that it can satisfy the tower crane working requirement with low cost, high speed and high precision, and it simultaneously provides a better option for low precision sensor to acquire highly precise output.

Keywords: Elman Network; Tower Crane; Anti-Collision; Time Fusion; Ultrasonic Sensor

投稿时间：**2013-10-17**

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