The Development of a Low-Cost Robotic Visual Tracking System

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Shun Fan Chiang

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Shun Fan Chiang

ABSTRACT

This thesis describes a system which is able to track and imitate human motion. The system is divided into two major parts: computer vision system and robot arm motion control system. Through the use of two real-time video cameras, computer vision system identifies the moving object depending on the colour features, as the object colour is matched within the colour range in the current image frame, a method that employs two vectors is used to calculate the coordinates of the object. After the object is detected and tracked coordinates are saved to a pre-establish database in the purpose of further data processing, a mathematical algorithm is performed to the data in order to give a better robotic motion control. Robot arm manipulator responds with a move within its workspace which corresponds to a consequential human-type motion. Experimental outcomes have shown that the system is reliable and can successfully imitate a human hand motion in most cases.

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