Editorial Notes

Robotics and Mechatronics are multi-disciplinary by nature. Both fields involve design, control, image processing, and hardware and software integration. Advancement in technology allows for advancement in research in both fields. This is precisely what the International Journal of Robotics and Mechatronics are capturing. The journal provides the platform for sharing the latest innovative research in all aspects of Robotics and Mechatronics. The second issue of the IJRM presents five high quality research papers with two papers on design and development of mechatronics systems and three papers on the cutting-edge application of image processing.

The first paper focuses on the design and development on three-bladed propeller for micro air vehicles (MAV). The focus is on the design of the mini propellers to improve the efficiency of the propulsion system. The computer program was developed using MATLAB to give the design details and evaluate the performance of the designed mini propellers. Structural analysis was done and various aspects of fabrication were considered to ensure the designed propellers can achieved the desired efficiency.

The second paper presents the work done by Muh-Don Hsiao, Chuen-Horng Lin and Jr-Wei Chen from the National Taichung University of Science and Technology, Taiwan. The authors propose automatic fiducial mark (FM) detection and search methods for LED wafer mark image which can improve the manually marked FM. The work illustrates the application of image processing in LED wafer technology. In the proposed detection, the upper reference FM is detected automatically, while the lower RFM is determined by using an image enhancement technique. As for the automated search FMs of LED wafer images, four steps, namely, rough search, FM matching, fine search and trimming for sub-pixel images were considered. The experimental work performed has proven that the proposed automatic detection of the RFM can effectively detect the upper FM and strengthen the unobvious lower FM in the LED wafer image with smaller error and better effect than that of the manually marked FM.

The next paper illustrates the application of image processing in providing extended field of view for aerial surveillance in micro aerial vehicles. The work focuses on image mosaicing to achieve aerial surveillance with high details and wider coverage. The proposed work consists of a gimbaled camera with overlapping fields of view to generate a panoramic view of an environment. The work has successfully tested experimentally using a ground robot.

The paper by Bharath M. K, et al., presents visual-servoing control for a quadrotor to achieve altitude control for a trajectory following. Position feedback control based on proportional-integral-and derivative (PID) controller is used for stabilization of the rotorcraft. The proposed vision-based estimation and control strategies were implemented in real time on the flying quadrotor to track the ground vehicle.

Last but not the least, the paper by M. M. Ferdaus et al. presents the design of self-controlled magneto-rheological dampers. These types of dampers have successful applications in mechatronics engineering. The authors designed a self-controlled MR damper using harvested energy from the vibration and shock-prone environment. The performance of the designed MR damper is evaluated using finite element analysis. This newly proposed MR damper was shown to be beneficial for the MR damper systems such as saving energy, size and weight reduction, lower expenses, and less preservation.

We hope that all fascinating contributions in this 2nd issue are beneficial to other researchers. We look forward to receiving your high quality contributions to the future journal issues.

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