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Abstract
A DSP-based image servo system combined by a Texas Instruments (TI) TMS320C6711 IDK (Imaging Develop’s Kit) system and a TMS320LF2407 DSP-based two-axis servo motion control system is presented in this thesis. The main structure divides into a IDK image fetches system and a DSP-based servo control system. The former a IDK system, includes IDK daughter card, TMS320C6711 DSK and MAX3110 signal transfer interface. The function of this system is that, first the images is captured via CCD camera and passes it to IDK daughter card; then, through the calculation and transformation of image processing in C6711 DSP, the characteristics of the image (for example: center, radius, shape) is identified, finally, the characteristics represented the objective shape will be transmitted to main computer through the RS-232 interface. The latter, a DSP-based servo control system, includes TMS320LF2407 DSK, and a X-Y table driving by DC servo system and which the motion trajectory program is developed to control X-Y table to fulfill the function of drawing line, triangle, square, and circle. The combination of afore-mentioned two systems can construct the image servo system proposed in this thesis. The function of this system is that if we puts a figure on the platform (circle, equilateral triangle, square, etc.), the IDK image fetch system will identify the shape, center and positions of the figure. And then these characteristics will pass to DSP-based servo control system to control X-Y table and drive the pen to draw the shape around the figure. Finally, the experimental results demonstrate the effectiveness and correctness of the proposed image servo control system.
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