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Automatic Music Score Recognition System Using Digital Image Processing

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Abstract : Music has always been an integral part of human’s daily lives. But, for the most people, reading musical score and turning it into melody is not easy. This study aims to develop an Automatic music score recognition system using digital image processing, which can be used to read and analyze musical score images automatically. The technical approaches included: (1) staff region segmentation; (2) image preprocessing; (3) note recognition; and (4) accidental and rest recognition. Digital image processing techniques (e.g., horizontal /vertical projections, connected component labeling, morphological processing, template matching, etc.) were applied according to musical notes, accidents, and rests in staff notations. Preliminary results showed that our system could achieve detection and recognition rates of 96.3% and 91.7%, respectively. In conclusion, we presented an effective automated musical score recognition system that could be integrated in a system with a media player to play music/songs given input images of musical score. Ultimately, this system could also be incorporated in applications for mobile devices as a learning tool, such that a music player could learn to play music/songs.

Keywords : connected component labeling, image processing, morphological processing, optical musical recognition
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