20AM2C-3 A Wavelet-Based Compression Method with Fast Quality Controlling Capability for Long Sequence of Capsule Endoscopy Images

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Wireless capsule endoscopy is a state-of-the-art tool for detecting intestines problems. The amount of image data generated by this tool is so large that data compression issue must be considered. In this work, we propose a fast and accurate quality-controlling algorithm that does not require recursive rate estimation for the compression of capsule endoscopy images. A corresponding distortion can be computed from a user-defined PSNR, and the distortion is used as the threshold for the codebook replenishment mechanism in a wavelet-based adaptive vector quantizer (VQ). This mechanism incorporates a pyramid-based vector structure and progressive SPIHT coding to meet the quality demand from a user accurately, and the resulting coding performance is excellent as well. Furthermore, in our VQ implementation, we adopt a modeling, rather than a training, technique for the generation of initial codebook (CB), where a pseudo-noise sequence is generated to create such CB at both the encoder and the decoder. Experimental results show that the proposed method does give a fast and reliable quality control of all reconstructed capsule endoscopy images under test, and the CB modeling produces comparable performance to the one using CB training.

20AM2C-4 The Target Tracking Using the Spatial-Temporal Probability Model

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The moving object extraction and tracking are the preliminary and fundamental processes in developing the intelligent human-machine interaction and surveillance systems. In the conventional target tracking systems, the methods of background subtraction are applied to extract the moving objects. However, the noisy image may be generated under the non-stationary background. The pixel-based temporal probability models are then proposed to reduce the noisy effect but the misalignment problem during the target tracking on the mosaic images will make the object extraction process inaccurate. In this paper, we improve the method of using the pixel-based temporal probability models by constructing the spatial-temporal probability models to overcome the misalignment problem. Furthermore, the mosaic images are formed by stitching the images captured by an active camera with pan-tilt movements such that the proposed system can real-time extract and track the moving object over a wide area.

20AM2C-5 Multi-Target Car License Plate Detection from Complex Environment

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In recent years, there have been many researches about license plate recognition being proposed, and license plate recognition system is used frequently. The three major parts in LPR (License Plate Recognition) are: plate detection, character segmentation and character recognition. A smart and simple algorithm is presented in this paper for LPR. This algorithm can be applied for multiple license plate detection. There may be many cars in the image with a complex background. In this paper, we study how to effectively extract license plates. We use edge detection, image dilation, block filtration and license proportion checking to extract plates accurately. Experimental results show that the algorithm is robust in extracting multi plates in the image with a complex background. Results yield a more 86.67% of correct license plate location.