Automatic lesions detection for wireless capsule endoscopy

Despite the technical progress to date, lesion detection and diagnosis in wireless capsule endoscopy relies heavily on the capabilities of the WCE video reviewers. The review process is challenging for the limited human capabilities of the reviewers as it demands intense focus and undistracted attention for inspection of a significantly large data volume (which is of the order of 50,000-120,000 images). Machine-based automatic lesion detection is essential for the reduction of false negative diagnoses, which can occur during this process. Indirectly, it can contribute to the reduction of the wireless capsule endoscopy video review-times. The consequent reduction of morbidity and healthcare costs can have a significant socioeconomic impact.

The main challenge in the development of automatic lesion detection methods is to identify and mathematically model the image features that differentiate lesions from normal mucosa (and intestinal content), while the diversity of the lesions makes the problem of automatic lesion detection an even more challenging task. Close collaboration between health professionals and information technology scientists, as well as pubic availability of annotated WCE datasets can contribute to an essential progress in this research direction.

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