

DEEP LEARNING AND MINIMALLY INVASIVE ENDOSCOPY – PANENDOSCOPIC DETECTION OF PLEOMORPHIC LESIONS

João Ferreira

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Poster

Oesophagus

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A convolutional neural network model achieved 83.6% to 97.6% accuracy for automatic detection of pleomorphic gastrointestinal lesions across all segments in capsule endoscopy images from eight different device brands.

KEY POINTS

- The study developed the first artificial intelligence model for panendoscopic detection of vascular lesions, protuberant lesions, hematic residues, ulcers, and erosions in capsule endoscopy and colon capsule endoscopy from multiple manufacturers.
- The model was trained and validated on 355,110 images including 6,977 esophageal, 12,918 gastric, 258,443 small bowel, and 76,772 colonic images, with comparison to three capsule endoscopy experts.
- Accuracy varied by anatomic segment: esophageal binary classifier 83.6%, gastric binary classifier 96.6%, small bowel undenary classifier 97.6%, and colonic trinary classifier 94.9%.
- The authors state this addresses an interoperability challenge and suggest deep learning tools may change minimally invasive capsule panendoscopy, noting current capsule endoscopy is time-consuming with suboptimal upper gastrointestinal diagnostic yield.
- This material is relevant to gastroenterologists and endoscopists interested in artificial intelligence applications for capsule endoscopy interpretation.

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