

JOINT MULTIVIEW LEARNING ENHANCES CHARACTERIZATION OF COLORECTAL POLYPS IN WHITE LIGHT ENDOSCOPY

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Poster

Colorectal

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A multiview learning model using Transformer attention to jointly process multiple colonoscopy frames of a polyp outperformed traditional per-frame aggregation methods for classifying polyps as adenomatous or non-adenomatous.

KEY POINTS

- The proposed model uses a CNN to embed each frame and a Transformer attention model to jointly process multiple frames and predict a single classification score for the entire sequence, rather than scoring frames individually and then aggregating
- In a test set of 565 polyps from 317 videos classified by expert gastroenterologists, the joint learning model achieved AUROC of 0.959-0.962 for sequences of 10-40 frames, consistently outperforming baseline aggregation methods (mean score, maximum score, and voting)
- Traditional aggregation approaches process each frame separately and do not consider frame quality, diversity, or complementary information such as polyp geometry across multiple views
- The model was tested on predicting endoscopic appearance-based classification by gastroenterologists; prediction of histology results was not evaluated
- This work is relevant to developers and researchers working on computer-aided diagnosis systems for colonoscopy polyp characterization

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