

IMPROVING AUTOMATED REPORTING IN COLONOSCOPY: AN ARTIFICIAL INTELLIGENCE POWERED FRAME-BY- FRAME POLYP RE-IDENTIFICATION APPROACH

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Poster

Colorectal

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An AI-based pipeline using a Siamese Twin Neural Network and hierarchical clustering was developed to automatically identify individual colorectal polyps and retrieve corresponding images for colonoscopy report generation.

KEY POINTS

- The pipeline was tested on 29 polyps from 10 colonoscopies and achieved a normalized mutual information of 0.862 and adjusted rand index of 0.835, indicating at least 80% of data can be accurately clustered and identified.
- The system achieved an average precision of 0.763 for retrieving correct and corresponding individual polyp images.
- The AI model was trained on frames from 549 colonoscopy videos and validated on 61 videos recorded across 7 different endoscopy centers.
- The approach has potential to simplify and accelerate automatic colonoscopy report generation while providing characteristic images for each detected polyp.
- This work addresses a gap as no widely adopted solution currently exists for automated individual polyp identification and discrimination in colonoscopy reporting systems.

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