

NOVEL APPLICATION OF ARTIFICIAL INTELLIGENCE TO MEASURE COLONOSCOPY INSPECTION TIME

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Poster

Colorectal

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Convolutional neural networks were developed to automatically measure colonoscopy inspection time by detecting cleaning and polypectomy phases during withdrawal, achieving 98.2% correlation with manually annotated ground truth.

KEY POINTS

- Two ResNet-101 CNNs were trained on 100 prospectively collected colonoscopy videos (213,936 cleaning frames and 56,273 polypectomy frames) to detect cleaning and polypectomy events during colonoscopy withdrawal.
- In a test set of 80 procedures from expert and non-expert endoscopists, AI-predicted median colonoscopy inspection time was 6.9 minutes (IQR 5.1–9.0) compared to manually annotated ground truth of 7.1 minutes (IQR 5.3–9.6), with a correlation coefficient of 98.2%.
- The AI system correctly categorized 96.3% (77/80) of procedures as having more or less than 6 minutes of inspection time.
- Median withdrawal time documented in the endoscopy reporting system was 15.0 minutes (IQR 10.0–23.0), substantially higher than the median inspection time, demonstrating considerable difference when cleaning and polypectomy events are excluded.
- This approach may enable automated measurement of colonoscopy inspection time in clinical practice without requiring dedicated staff to manually pause timers during non-inspection events.

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