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Summary

ENDOBOOST: A PLUG-AND-PLAY MODULE FOR FALSE POSITIVE SUPPRESSION DURING COMPUTER-AIDED POLYP DETECTION IN REAL-WORLD COLONOSCOPY

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Colorectal

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A new plug-and-play AI module called EndoBoost and accompanying FPPD-13 dataset are proposed to suppress false positives during AI-assisted colonoscopy polyp detection.

KEY POINTS

- The FPPD-13 dataset includes 1300 true positive samples and 1300 false positive samples across 13 classes, collected from real-world colonoscopy videos analyzed by a YOLOv5 polyp detector and validated by endoscopists.
- EndoBoost uses anomaly detection with normalizing flow and a learnable image encoder to identify and reject false positives in real-time during polyp detection.
- In validation testing, EndoBoost achieved the highest performance among anomaly detection models with AP of 0.788 and AUC of 0.793, and reached equivalent performance to fully supervised methods using only 10 percent of false positive training data.
- EndoBoost demonstrated robustness to unseen false positive classes with AP of 0.781 and AUC of 0.974, and successfully suppressed false positives in prospective testing on approximately one hour of colonoscopy video.
- Multi-center clinical trials using EndoBoost are underway.

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