

SMART VIDEOCOLONOSCOPY

Computer aided detection software used in real time video-colonoscopy operations for increasing polyps' detection rates

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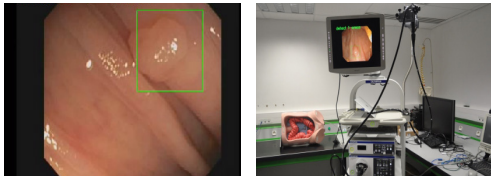
L'AVENIR EST FAIT D'AUDACE

PRESENTATION

Colorectal cancer is the second most lethal cancer type in developed countries and more than 70% of the polyps, when present in one's colon or rectum, can eventually change into tumor cells (mostly adenomas).

Polyp's visual detection during colonoscopy is the world's gold standard in colorectal cancer diagnosis. However, today polyps detection rates during these preliminary visual inspections commonly fall below 80%, resulting in that almost 50% of diagnosed colorectal cancer were not detected during a first colonoscopy, and it is widely assumed that these results are significantly practitioner-dependant. Still, all existing solutions focus on contrast modification or vision angle widening for best inspection of the mucosa.

Our software aims at significantly enhancing polyp's detection rate by visually alerting the practitioner in real time during a colonoscopy procedure. The method is based on optimized reinforced active-learning algorithms for image to image analysis. It is adapted to real time video treatment (more than 25 fps analyzed) and aims at detection rates higher than 90% at the practitioner level.



Example of Polyp detection in colonoscopy video
 Quentin Angermann,
 ETIS Lab ©

Implementation of the technology in an endoscopy column
 ENSEA ©

Computer Aided Detection (CAD) - Polyps - Cancerology
 Colonoscopy - Endoscopy - Video analysis

INTELLECTUAL PROPERTY

International patent application PCT/
 EP2017/064972

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DEVELOPMENT PHASE

- ✓ Validated on videos stream
- ✓ Evaluation during colonoscopy exams ongoing

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COMPETITIVE ADVANTAGES

- Real-time Computer Aided Detection software for practitioners
- Improve polyp detection rates over 90% with low false positive detection
- Fully compatible with clinical use
- Usable either as an add-on or natively embarked in endoscopy columns

APPLICATIONS

- Colorectal cancer diagnosis: computer Assisted Detection of polyps in colonoscopy
- Can be adapted to other endoscopy procedures (ulcers for example)

PUBLICATIONS

[Angermann et al : "Real-Time Polyp Detection in Colonoscopy Videos. : A Preliminary Study For Adapting Still Frame-based Methodology To Video Sequences Analysis"](#)