AI-aided Medical Image Analytics for Early Cancer Screening

Smart doctor assistant for early cancer screening through medical image analysis

Keywords:
- Digital health, histopathological image, cytological image and endoscopy video analytics, lesion, cancer
- Machine learning (ML), deep learning (DL), computer vision (CV), multimodality, risk assessment

Problems addressed

- Medical image analysis is very time-consuming for doctors
- Impossible for doctors to analyze all collected medical images
- Images with unobvious features are easily overlooked by doctors with inadequate experience
- Medical diagnosis is location-restricted

To address the problems, ASTRI has been developing AI-aided medical image analytics technologies to help doctors improve diagnosis and work efficiency.

Innovations

The customizable medical image analytics system for collaborative diagnosis, image management, lesion detection and classification in pathology image and capsule endoscopy video.

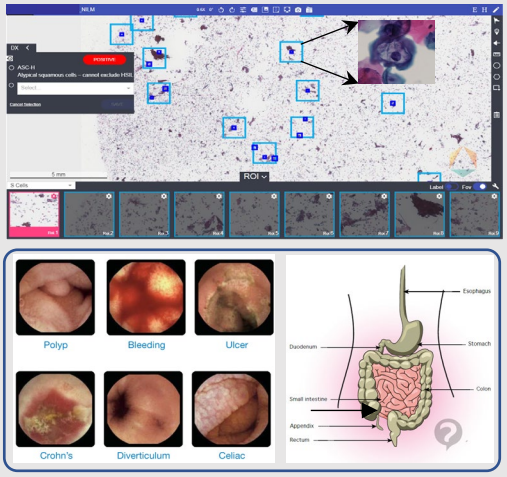
The innovation outline:

- **Lesion detection** for ultra-long (several hours) video analysis of capsule endoscopes
- **Malignant cell screening** for digitalized whole slide (file size reaches several GB) cervical pathological image
- **Image enhancement, video summary** and **location segmentation** for system performance improvement
- **Model design and optimization** for accuracy improvement and processing speed acceleration.
- **Unified platform management** for ease of use.

Key impact

- AI-aided medical image analytics system can work 24 hours a day.
- AI processing and analysis speed far exceeds doctor's manual analysis
- The medical image analytics system can be continuously improved and optimized
- AI-assisted medical image analysis system can be used as a mentor for junior doctors

Innovation snapshot



Project completed

- 2018 and 2019

Applications

AI-aided

- Malignant cell detection in pathology image
- Lesion detection and cancer identification in endoscopy video

Patent(s)

- US Patent No. 10,586,336 and CN App. No. 201880000830.0
- US Patent No. 10,354,122 and CN Patent No. ZL201880000218.3
- US Patent No. 10,937,158 and CN App. No. 201980001954.5
- US Patent No. 11,270,447; CN App. No. 202080000389.3 and HK App. No. 62021023136.6

ASTRI Patent Search

Commercialisation opportunities

- IP licensing
- Technology co-development