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. 11,270,447; CN App. No. 202080000389.3 and HK App. No. 62021023136.6

**ASTRI Patent Search**

**Commercialisation opportunities**
- IP licensing
- Technology co-development

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