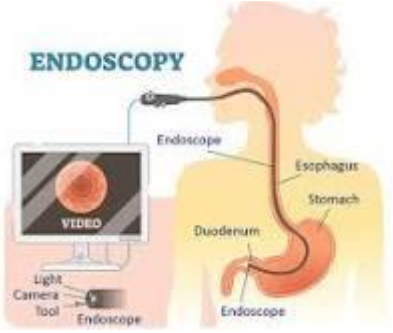
Wincomm Case Study: Medical PCs for AI-based GI Endoscopy Systems

GI endoscopies have become quite commonplace. But the technology behind them continues to improve, making for better, safer procedures.

Gastrointestinal (GI) endoscopy has become one of the most common clinical procedures. Traditionally, a flexible tube with a camera is inserted into the patient's esophagus to examine the stomach and duodenum. With rapid advances in medical technology, procedures are evolving to provide physicians with faster and more accurate imaging, while reducing patient discomfort and risk.



The GI endoscopy is quite common today. However, the procedure itself is performed quite differently than in the recent past, and continues to evolve.

intel partner Gold IoT Solutions

Recent innovations include self-propelled colonoscopes that provide a 360-degree view and reduce patient pain, and narrow-band imaging (NBI) endoscopes with filters to enhance vessel-to-mucosa contrast for clearer visualization. Combined with artificial intelligence (AI) algorithms, these hardware advances are greatly enhancing diagnostic quality.

AI Driven Diagnostic Precision

AI has been widely applied in endoscopic image analysis, particularly for polyp detection and classification. Validated algorithms help physicians minimize human error and improve diagnostic accuracy and consistency. While still emerging in clinical adoption, AI has demonstrated high accuracy in gastrointestinal examinations, generating strong optimism in the medical community.

Intel® Core™ processors play a central role integrated with Nvidia® graphic card. Their hybrid architecture combines Performance-cores (P-cores) and Efficient-cores (E-cores), dynamically assigning workloads to balance speed and power consumption. With DDR5 memory support and PCIe 4.0, the processors provide ample bandwidth for high-resolution medical imaging. Intel® DL Boost and Nvidia® GPU accelerate AI inference, meeting the demanding needs of real-time surgical imaging.

The Role of Wincomm Medical PCs

Medical systems must balance high performance, low power, compact size, and long-term availability. Wincomm addresses these needs with its portfolio of medical-grade panel PCs that seamlessly integrate AI computing. Key features include:

- High performance and reliability: powered by Intel® processors for continuous stable operation.
- Nvidia MXM graphic card embedded, delivers high computing performance and outstanding graphics processing capabilities.
- Medical-grade safety: certified with UL/EN 60601-1 and EMC standards, featuring 4KV I/O isolation.
- Antibacterial and easy-to-clean design: IP65 protection for sterile surgical environments.
- Silent cooling: fanless design ensures quiet operating rooms.
- Expandability: PCIe slots for AI imaging capture and accelerator cards.

These capabilities make Wincomm platforms suitable for GI endoscopy, diagnostic imaging, and increasingly complex AI medical workflows.

Case: Medical Endoscopy Virtual Assistant System

Medical Endoscopy Virtual Assistant System exemplifies AI and voice assistance in endoscopy. It integrates natural language processing and image recognition to deliver real-time auditory and visual prompts, ensuring higher quality examinations. Features include:

- Multi-point data input: processes three data sources simultaneously, faster than traditional methods.
- Real-time report generation: works with Wincomm PCs to automatically generate reports during procedures.
- Dynamic learning: AI updates labels and libraries continuously for greater diagnostic accuracy.
- Reducing physician burden: automation allows physicians to focus more on patient care.

According to the professional GI doctor said, “We are transforming the future of endoscopy. The virtual assistant can significantly ease the surgeon’s burden while providing better care to patients.”

intel partner Gold IoT Solutions

Operating rooms are already quite crowded. Hence, any new equipment that's introduced must conform to strict power and space guidelines.

Privacy and Future Outlook

With rapid advances in AI and data-driven healthcare, patient privacy remains paramount. Wincomm and partners strictly comply with international medical data standards to ensure data integrity and security.

In summary, with the powerful computing of Intel® Core™ processors, Nvidia® graphic cards, and the robust integration of Wincomm's medical-grade PCs, AI-based GI endoscopy is setting new clinical benchmarks. This advancement not only enhances physician efficiency but also improves safety and precision for patients, paving the way for the future of intelligent healthcare..

intel partner Gold IoT Solutions

For more information about Wincomm and its products, please visit
[Powerful AI Ready Medical All In One PC (GPU)]
[Medical OR All In One PC]