Case Study

AI-Powered PACS Platform for Medical Image Analysis

Artificial Intelligence helps doctors and patients with the hard-to-diagnose symptoms

Even for seasoned medical doctors, some symptoms in the images are still hard to find and they could jeopardize the health of patients. Like in the initial stage of dementia, it is hard to find anything abnormal in the scanning image. To tackle the problem of "data rich, insight poor", trained on mass data, artificial intelligence can spot minor symptoms from images that look normal and allows doctors to provide references for more effective medical procedures and healthcare.

Challenges

Herricane Medical was looking for an Intel® Xeon®-based medical-grade system to build its picture archiving and communication system (PACS). The PACS is an imaging management tool that provides convenient storage and access to images from multiple modalities, including CR, DR, CT, MR, US, 2D/3D mammograms, SR, Endoscopy, etc. To process the massive image data and AI analysis, this medical system needs the support of a graphic card. In addition, IEC-60601 compliance is required.

Main Requirements

- Intel® Xeon®-based platform with IEC-60601 compliance
- Supports 4GB graphics card
- Equipped with 128GB RAM
- M.2/NVMe SSD for storage
- Supports Linux operating system (Ubuntu 18.04)

About Herricane Medical

Herricane Medical is a professional medical service provider located in Taiwan. It is committed to developing mobile intelligent medical solutions and quantitative medical analysis methods.

Visit the Website

The powerful medical-grade embedded system provides reliable AI application

Axiomtek has proposed its mBOX600, a medical-grade embedded system with IEC-60601 compliance. The mBOX600 is powered by the Intel® Xeon® or 8th gen Intel® Core™ i7/i5/i3 (Coffee Lake). It has one HDMI and two DisplayPort ++ ports with 4K Ultra HD and triple-view display, providing an excellent viewing experience for doctors. It also has one half-size PCIe x16 slot for adding a GPU card to enhance AI performance. To load images from scanning equipment, in addition to a SATA III interface, one more M.2 Key M NVMe slot enables faster data reading. Ensuring the stability of the connection and data transmission, the mBOX600 with isolated COM and LAN became a reasonable choice. Moreover, the advanced platform adopts optional antimicrobial coating chassis for the medical environment.

Application
AI-driven image analysis optimizes the diagnosis and enhances the well-being of patients

The customer has deployed Axiomtek's mBOX600 at the edge to build its AI-powered PACS platform for medical image analysis. Once a patient finishes CT or MRI scan, the images can be transmitted to the system for analysis. With PACS, patient medical reports and images can be viewed on any computer within hospitals. It helps achieve an accurate diagnosis and enhances overall efficiency. More than that, the past images stored in PACS can be imported into the system for AI-assisted diagnosis as well.

GPU card

Importing images for AI analysis

mBOX600

System Configurations of the mBOX600

- Intel® Xeon® E-2176M processor, up to 4.40 GHz (codename: Coffee Lake)
- 2 DDR4-2400 SO-DIMM for up to 64GB memory
- 1 HDMI and 2 DisplayPort++ with 4K UHD supported
- 2 COM and 2 GbE LAN support 4kV isolation
- Supports one half-size PCI Express x16 slot
- Swappable 2.5" SATAIII SSD tray with security lock
- Antimicrobial coating chassis (optional)
- EN 60601-1 compliance

*For detailed specifications, please visit www.axiomtek.com or go to Products > Systems & Platforms > Medical Grade System for > Medical Embedded System for mBOX600

Why Axiomtek

Deploying AI-powered systems means a big step in digital transformation for hospitals to provide better healthcare. Axiomtek's high-performance mBOX600 is purpose-built for efficient and reliable control of medical devices at the edge. With high computing capabilities, reliability, and compatibility with the most popular AI software, it is ideal for integration into medical analytics projects.

"Herricane Madical has expertise in the medical imaging field. We understand that a steady AI-ready platform is very useful in alleviating doctors' workloads. We are very satisfied with Axiomtek's products. Its medical-grade embedded system is definitely the best choice for healthcare applications. In addition, Axiomtek's fast response and flexible design services make the project run smoothly," said Herrick Liang, Managing Director of Herricane Medical.

About Axiomtek Co., Ltd.

Axiomtek has experienced extraordinary growth in the past 30 years because of our people, our years of learning which resulted in our tremendous industry experience, and our desire to deliver well-rounded, easy-to-integrate solutions to our customers. These factors have influenced us to invest in a growing team of engineers including software, hardware, firmware, and application engineers. For the next few decades, our success will be determined by our ability to lead with unique technologies for AIoT and serve our key markets with innovatively-designed solution packages of hardware and software – coupled with unmatched engineering and value-added services that will help lessen the challenges faced by our systems integrator, OEM and ODM customers and prospects alike. We will continue to enlist more technology partners and increase collaborations with our growing ecosystem who are leaders in their fields. With such alliances, we will create synergy and better deliver solutions, value, and the expertise our customers need.

Axiomtek is a Member of the Intel IoT® Solutions Alliance. A global ecosystem of more than 800 industry leaders, the Alliance offers its members unique access to Intel technology, expertise, and go-to-market support—accelerating the deployment of best-in-class solutions.