Vision AI-based Patient Pose Detection

FOR INTELLIGENT MEDICAL DIAGNOSIS EQUIPMENT

ignitarium

Spark On.

INTRODUCTION

A Tier-1 global OEM that manufactures medical diagnosis equipment approached Ignitarium for a first-of-its-kind prototype to detect poses of patients during the usage of the equipment and perform distance-based analysis on selected body parts.

Service in Focus

PROTOTYPE SYSTEM DEVELOPMENT

Industry
Healthcare / medical diagnosis equipment

Challenge
Implementing the required processing functions, namely image/video processing and deep learning networks on low cost, resource (TOPS & memory) constrained hardware

Scope
Creation of an end-to-end solution pipeline starting from camera used to capture patient images, then artificial intelligence powered human pose analysis and finally displaying the results with an intuitive GUI

THE CHALLENGES

While designing the solution, Ignitarium was required to address the following challenges:

- Selecting the imaging sensor and benchmarking its physical mounting positions against software accuracy
- Developing the solution considering least possible computing resources while adhering to time latency requirements
- Strictly timed intermediate deliveries

IGNITARIUM'S APPROACH

- The solution was required to detect various human positions during medical diagnosis procedures without any human intervention. Ignitarium's engineering team discussed the physical mounting possibilities of the camera module with stakeholders from customer. In parallel there were discussions with camera vendor. This parallel activity saved time and last-minute surprises

- A temporary setup of a medical diagnosis center was created in Ignitarium's office premises, which helped in generating considerably large amount of training and testing data in-house

- A unique amalgamation of deep learning based human key points detection, classical machine learning based classification and computer vision-based measurement was created as a solution to the problem statement

- An intuitive GUI was developed in the beginning and then code development was done considering the operation flow by an averagely skilled operator

- Accuracy and latency benchmarking was done at every intermediate release to avoid heavy rework during final delivery stage

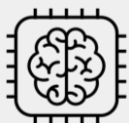- A new calibration method for camera positioning was developed

BUSINESS IMPACT

Enabled customer's R&D team to validate the need and feasibility of implementing new features in their product and its roadmap

Enabled 30% saving in customer's R&D budget by leveraging our core expertise in image processing & deep learning

Increase in customer's confidence in leveraging AI to add intelligence and thereby enhancing the value of offering to the end-customer

Looking to transform your product engineering?

Drop us a line to get in touch with our experts.

Contact Ignitarium at info@ignitarium.com