

Client Overview

The client is a US based instrument manufacturing firm.

Problem Statement

Image viewer software is required to visualize and analyze the high resolution scanned images coming from a Digital Scanning Microscope or any other similar instruments. The image viewer should be having options to digitally magnify/de-magnify the loaded images, to apply image analysis algorithms on selected areas on images, and to have image management facility for storage and retrieval of the images/results etc.

Solution

Image viewer software is developed at Optra Systems for efficient visualization and analysis of the high resolution images.

The image viewer is having the following functionalities:

1. Image Management

Scanned images are stored on hard disk and the session data is stored on MySQLServer, so that user can view desired session whenever required.

2. Image Analysis

Image Analysis component consists of algorithms which assists pathologists for analysis of whole slide/selected area of the image/field of view (FOV). Algorithms provided are ER/PR/HER2NEU/KI67.

3. Image Compression

Given the larger image size of the raw images coming from the instrument, the image compression technique is used for storage and retrieval of the imaging data. JPEG2000 compression is used for the purpose which enables the compression ratio of the order of 1:25 to 1:50, while preserving the image details. The compression ratio varies for individual images as per image content. Typically for a tissue area of 15mm X 15mm, at 20X magnification, image size in pixels is 30000 pixels X 30000 pixels. If this data is stored in raw format, Image size would be 2.5GB, but when compressed, image size is reduced to 50 to 100 MB. The Client Problem Statement The Solution 3 © Copyright 2013 - 2014 Optra Systems Pvt. Ltd. Rev. 1 A The image compression provides a very efficient data transfer between memory and the viewer application during runtime and consumes lesser amount of RAM. Compression also enables easy transfer of the images across different image servers and to view the images over network in efficient fashion.

System Requirements

The data warehouse was built on relational database using:

- Relational database management system: My SQL 5.0 Server
- .NET application to display information

Benefits

- Storage and retrieval of huge image data in compressed format with 1:25 to 1:50 compression ratios
- Image analysis algorithms to assist pathologists

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About Optra Health

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