



THE WHITE ROSE GRID

e-Science Centre of Excellence

Grid-enabled MRI

“The developed GRIDmri demonstrator allows the data analysis to be carried out quickly by employing a set of distributed machines on the Grid.”

Magnetic Resonance Imaging (MRI) is a vital technique for the analysis and detection of many diseases, including cancer. It enables a user to build 3D images of body structures for further analysis using human and automated methods.

The Cybula GRIDmri system was built with the help of Hull Royal Infirmary to demonstrate Grid capabilities in supporting the analysis of MRI data. Cybula Ltd, a University of York spin-off company, drew upon the extensive local Grid expertise.

Currently, the team at Hull uses workstations and semi-manual analysis methods to take images from their MRI scanner and enhance areas of interest. Later this year, following the planned introduction of a higher-resolution scanner, there will be a need to deal with greater volumes of data from the

scanner. Processing of these large quantities of data requires a computational facility with a significant processing power, for example offered by the Grid. The developed GRIDmri demonstrator allows the data analysis to be carried out quickly by employing a set of distributed machines on the Grid.

This project implemented a system that uses data from the scanner and permits a user to undertake a dynamic MRI analysis, that is, the analysis of data over time from a number of MRI images. This analysis is used to identify the type of lesion (whether it is malignant or benign). Furthermore it helps to predict the patient's response to a particular therapeutic intervention.

CYBULA
high performance pattern recognition systems



THE UNIVERSITIES OF LEEDS, SHEFFIELD AND YORK

THE WHITE ROSE GRID

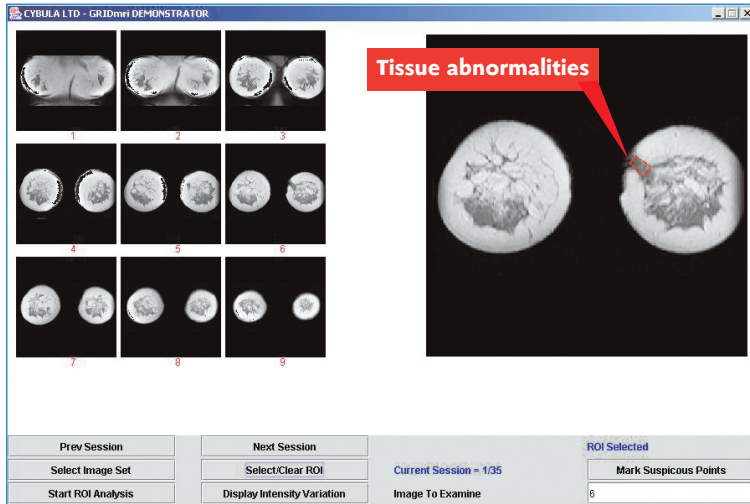


Figure 1: A screen shot of the images obtained from the Cybula's GRIDmri demonstrator

Patients may require injections of a contrast agent intravenously to enhance the accuracy of the images. During image acquisition, a set of images are captured from different cross-sections of the breast (showing different breast tissues) at fixed time intervals. Figure 1 presents an exemplary screen shot with a set of MRI images taken during the image acquisition time. On the right hand-side of this figure there is an enlarged version of one of the images with the highlighted area submitted for further analysis.

Further Information

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