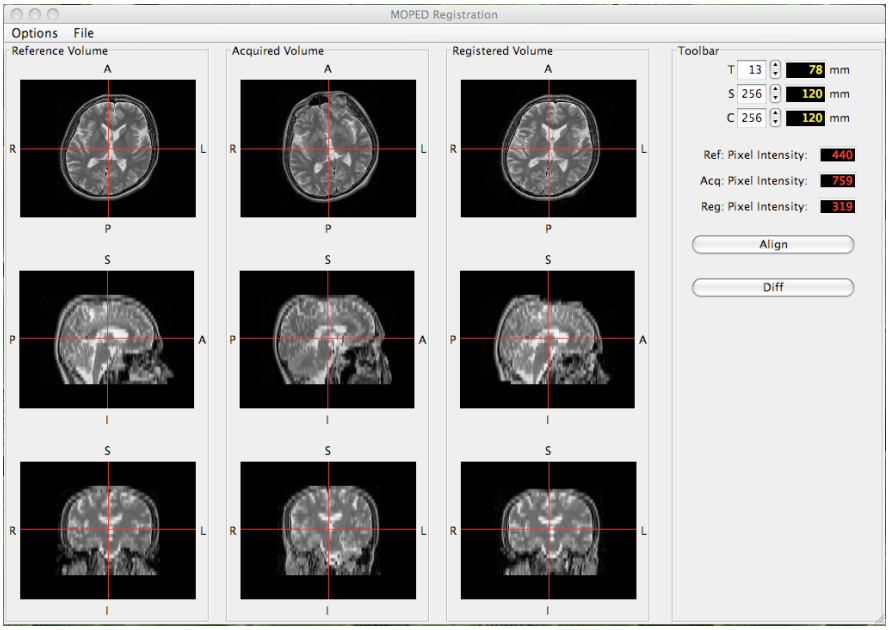
Stargazing software saves lives



The patented 'Registration Engine' used for processing MR and CT scans
(Credit: Blackford Analysis Ltd)

In the 21st century, medical imaging has become as commonplace as penicillin was in the previous 100 years; providing physicians and surgeons with the ability to look inside the body before, during and after treatment and has become vital in improving the quality of life for patients.

A modern radiology department increasingly deals with volumetric data – generated by three dimensional MRI (magnetic scans providing detailed information about the body) and CT (scans which image cross sections of the body) rather than two dimensional X-ray images. Although the detail offered by these studies gives much greater insight into many conditions, a problem is the sheer size of the studies – Gigabytes of data need to be lined up before any interpretation can be made, especially in cases which have required many scans over a long period of time, tracking the illness or cure.

MOPED changes everything

A spin out company from the University of Edinburgh called Blackford Analysis has used MOPED, a technology developed through funding from the Science and Technology Facilities Council (STFC), to tackle this problem. The company has built a 'Registration Engine', which delivers considerable time savings to radiologists when interpreting such studies, allowing direct, side-by-side comparisons of scans. This eases the complex process of tracking disease progression and as such enables side-by-side comparison of current and prior studies by all radiologists.

Blackford Analysis' software was born out of research designed to provide a way of establishing the age of galaxies from giant surveys of the sky. The software was used to determine the ages of hundreds of thousands of galaxies in a very short time; something previously impossible due to the sheer size of the surveys.

This new technique is set to greatly improve radiology throughput, saving hospitals and health authorities potentially millions of pounds whilst significantly improving the experience for patients, and allowing faster diagnosis.

Stars to scanning

Two years of development of the MOPED process led to the formation of Blackford Analysis in August 2010 after they successfully secured a six-figure investment sum from American angel

investors, support from Scottish Enterprises' Seed Fund and private cash. Business development support to accelerate and attract new investment and funding came via a SMART award from Scottish Enterprise in July 2010.

Funding from the STFC, Scottish Enterprise's Proof of Concept Programme and Seed Fund gave the company the ability to translate scientific research into a tangible product with enormous potential to improve the quality of treatment for patients, whilst reducing overheads for health authorities.
The journey from university to limited company reflects a successful example of pure research being developed into something to fulfil a real need in society. A working demonstration of the 'Registration Engine' software will be shown to potential customers at the largest medical imaging event in the world; the Radiological Society of North America's annual conference in November 2010.

The 'Registration Engine' software is used to compare MR and CT images (Credit: Peter Tuffy / University of Edinburgh)

Beyond medical imaging

Though the initial end user of the MOPED process is the medical imaging sector, Blackford Analysis believes that its software should be of interest to any company and organisation that needs to process large quantities of data. These could include oil and gas producers where is there a need for seismic interpretation for surveying, defence organisations conducting airborne image processing, or financial companies with an interest in fast model fitting or price estimation. Potential benefits could include a reduction in processing time, the ability to handle larger datasets and reduced hardware requirements.

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