

## MEDICAL IMAGING AND APPLIED MATH: IMPROVING THE DIAGNOSIS OF DISEASE

Great advances have been made in medical imaging technology, such as magnetic resonance imaging and computer tomography scans, over the last two decades. This technology produces detailed images of organs, bones, tissues, blood vessels, lesions and tumours in patients' bodies. New interdisciplinary research at the University of Calgary is focused on applying mathematics to extract new or additional information from complex medical imaging datasets. It is believed that this information will help healthcare professionals and their patients prevent, understand, diagnose, treat and monitor disease, manage and coordinate care, and reduce medical errors.

This presentation will discuss technology developed by the laboratory of Dr. Ross Mitchell and commercialized by the company he co-founded, Calgary Scientific Inc. This technology allows advanced interactive visualization and analysis of medical image datasets. It has been used to improve the speed and accuracy of disease diagnosis, with applications to stroke, trauma, and brain cancer.

**Dr. Ross Mitchell** is a Professor in the Departments of Radiology, Clinical Neurosciences, and Biomedical Engineering, and an Adjunct Professor in the Department of Computer Science, at the University of Calgary. There he holds the Alberta Innovates Technology Futures (AITF) / Calgary Scientific Inc. (CSI) Industrial Research Chair in Medical Imaging Informatics. He is a scientist in the AITF Center for Machine Learning, the AITF Biovantage Center for Biomedical Engineering, and an Alberta Innovates Health Solutions Senior Scholar. He is also a Co-Founder, and the Chief Scientist, of Calgary Scientific Incorporated.

Dr. Mitchell has received numerous awards for his research including: the Berlex Canada MS Research Award; Best Paper Awards from the Canadian Association of Radiologists and the International Organization for Medical Physics; First Prizes from the International Congress on Computer Assisted Radiology and from the International Society for MR in Medicine; two Awards of Merit from the Radiological Society of North America; and, the Roger Bauman Award from the Society for Imaging Informatics in Medicine.

Dr. Mitchell has a proven research track-record comprising 96 reviewed publications (17 patents, 79 journal articles), 103 invited presentations, and 188 published abstracts. Dr. Mitchell supervises a research team investigating space/frequency analysis, medical image processing, segmentation and visualization technologies.

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