CBME Seminar

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Seminar Title: Cardiac Flow Analysis Based on Magnetic Resonance Imaging

Presenter: **Dr. Kelvin K. L. Wong**
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RMIT University, Bundoora, Victoria, Australia

Date and Time: 30th March 2011 (Wednesday) at 3.10 PM

Venue: Innova21 Building, Basement Level, Room B18

Site Map: http://www.adelaide.edu.au/campuses/mapscurrent/north_terrace.pdf

Abstract

Many types of cardiac abnormality have an implication on blood flow. However, most present-day diagnostic modalities analyse myocardial structures and not the cardiac flow within to detect heart defects in-vivo. Currently, various imaging modalities, such as ECG, single photon emission computed tomography (SPECT), positron emission tomography (PET), X-ray computed tomography (CT), and cardiac magnetic resonance imaging (CMRI) provide a non-invasive approach for scanning humans with heart abnormalities, and are utilised in the management of cardiac patients. There is a need to develop a visualisation system for analysing flow of blood within the human heart. The flow properties can be derived by means of tracking using a series of time dependent magnetic resonance images. An indication of flow vortices can be provided by numerical computation of vorticity values within the defined region of blood flow. In this study, the crucial strategies for this approach are implemented, and the achievable diagnostic results and quality of assessment are investigated. The developmental stages of the framework and system design of each component for cardiac diagnosis are detailed in this presentation.

Biography

Dr. Kelvin Wong graduated from Nanyang Technological University (NTU), Singapore, with a Bachelor of Mechanical and Production Engineering (Hons) in 2001. He then obtained a Masters of Applied Information Technology, at the University of Sydney in 2003. Kelvin worked for Kruger Ventilation Industries in Singapore as a research specialist and completed his PhD in 2009 at The University of Adelaide. He has authored more than ten peer-reviewed journal and conference publications and received a Young Investigator Award at the 15th International Conference on Mechanics in Medicine and Biology (ICMMB) and an Outstanding Paper Award at the 13th International Conference on Biomedical Engineering (ICBME) in 2006 and 2008 respectively. He is also the recipient of the Heart Foundation Travel Grant in 2009. Kelvin has developed the Magnetic Resonance Fluid Motion Tracking technique and created the Medflovan medical image processing software to analyse cardiac blood flow.

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