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UNIVERSITY OF CALGARY
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING



Engineering in Medicine and Biology Society Chapter of the
IEEE Southern Alberta Section

Biomedical Engineering Graduate Program



Centre for Bioengineering Research and Education and the

NSERC CREATE International and Industrial Imaging Training Program



Invite you to a Seminar on

**CLASSIFICATION OF BENIGN AND MALIGNANT
VERTEBRAL COMPRESSION FRACTURES
IN MR IMAGES**

BY PAULO MAZZONCINI DE AZEVEDO-MARQUES, PHD

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INTERNAL MEDICINE DEPARTMENT

RIBEIRÃO PRETO MEDICAL SCHOOL, UNIVERSITY OF SÃO PAULO

RIBEIRÃO PRETO – SP, BRAZIL

AT NOON, THURSDAY, 3 DECEMBER 2015, HS O'BRIEN 1500, HEALTH SCIENCES CENTRE

ABSTRACT: Magnetic resonance imaging (MRI) is considered the most reliable and most widely used imaging method for spine diseases. MRI can be helpful in classifying the nature of vertebral compression fractures (VCFs) as benign (secondary to osteoporosis) or malignant (caused by bone metastasis). Images of malignant VCFs typically exhibit low signal intensity throughout the vertebral body involved in T1-weighted MRI. Osteoporotic fractures characteristically demonstrate partial preservation of the normal fatty bone marrow signal in the vertebral body. The normally compact, convex, and nearly rectangular shapes of vertebrae degenerate into concave and rough shapes with indentations in benign VCFs. Malignant VCFs could result in a posterior bulge or convexity without substantial concavities. This seminar will present a set of image processing and pattern analysis techniques based on shape and texture features. Results of characterization and pattern classification of VCFs will be presented.

Paulo Mazzoncini de Azevedo-Marques is an Associate Professor of Medical Physics and Biomedical Informatics with the Internal Medicine Department, University of São Paulo (USP), School of Medicine, in Ribeirão Preto, SP, Brazil. He received his B.Sc. and M.Sc. degrees in Electrical Engineering in 1986 and 1990, respectively, and his Ph.D. in Applied Physics in 1994, from USP. He has previously worked on medical imaging quality control. His current research projects are mainly focused on imaging informatics in medicine. He held a research associate position at the University of Chicago in 2001, where he worked on medical image processing for computer-aided diagnosis (CAD) and content-based image retrieval (CBIR), under the supervision of Professor Kunio Doi. He is the coordinator of the Medical Physics and Biomedical Informatics facility at the University Medical Center at Ribeirão Preto Medical School and is the elected Vice-President of the Brazilian Health Informatics Association (SBIS) for 2015-2016. His main areas of interest are CAD, CBIR, and picture archival and communication systems (PACS).

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