



*The IEEE NCS Engineering in Medicine and Biology Society Chapter  
presents*

## **Computer-Aided Diagnosis of Breast Cancer: Towards the Detection of Early and Subtle Signs**

**A Special<sup>1</sup> Seminar by Prof. Rangaraj M. Rangayyan, University of Calgary  
Friday Oct 10, 2008, 11 am  
Room ETLC E6-060, University of Alberta, Edmonton**

**Abstract:** Mammograms are difficult images to interpret, especially in the screening context. Objective methods for the analysis of mammographic features are needed for the development of computer-aided methods to assist radiologists in the evaluation of ambiguous features. This seminar will present an overview of several image processing techniques that we have developed over the past 20 years for medical image analysis. The seminar will then present several features of mammograms such as Calcifications, Masses, Bilateral asymmetry, and Architectural distortion that can be used to detect cancer. Our latest work on the application of Gabor filters, phase portraits, and oriented texture analysis for the detection of architectural distortion will then be described in detail.

### **Speaker Biography**

Dr. Rangayyan is a Professor in the Department of Electrical and Computer Engineering, and an Adjunct Professor of Surgery and Radiology at the University of Calgary, Calgary, Alberta, Canada. His research interests are in the areas of digital signal and image processing, biomedical signal analysis, medical imaging and image analysis, and computer vision. His current research projects are on mammographic image enhancement and analysis for computer-aided diagnosis of breast cancer; region-based image processing; knee joint sound signal analysis for noninvasive diagnosis of articular cartilage pathology; and analysis of textured images by cepstral filtering and sonification. He is the author of the book *Biomedical Image Analysis* by CRC Press. He has organized many conferences in bio-medical area. He has lectured extensively in more than 20 countries, and is a Distinguished Lecturer of the IEEE EMBS Society. He has received numerous awards for his contribution in medical image analysis. He is a Fellow of the IEEE, SPIE, American Institute for Medical and Biological Engineering, Engineering Institute of Canada, Society for Imaging Informatics in Medicine, and Canadian Medical and Biological Engineering Society. More details about his work can be found at <http://enel.ucalgary.ca/People/Ranga/>.



<sup>1</sup>The seminar will have a duration of about 90 minutes, and will be followed by light refreshments.