IEEE CBMS 2015

The 28th IEEE International Symposium on Computer-Based Medical Systems

São Carlos and Ribeirão Preto, Brazil
June 22nd – 25th, 2015

Research School Program
### Thursday June 25, 2015 – Ribeirão Preto/FMRP

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**[08:45–10:15] | [10:40–12:15]** Mini-course – “Analysis of Shape, Texture, and Oriented Patterns in Biomedical Images”

**Speaker:** Rangaraj M. Rangayyan  
**University of Calgary, Calgary**  
**Professor, Department of Electrical and Computer Engineering**  
**Adjunct Professor, Departments of Surgery and Radiology**

This mini-course provides an introduction to the various types of shape, texture, and oriented patterns encountered in biomedical images. Methods to represent and process information related to shapes and contours of objects will be described, including signatures of contours, chain coding, segmentation of contours, polygonal modeling of contours, parabolic modeling of contours, thinning, and skeletonization. Methods to derive shape factors, such as compactness, moments, chord-length statistics, Fourier descriptors, fractional concavity, and speculation index, will be described. Models for the generation of random, ordered, and oriented texture will be described. Methods for statistical and structural analysis of texture, fractal analysis, and analysis of texture in the Fourier domain will be presented. Procedures for directional filtering in the Fourier domain and Gabor filters for the analysis of oriented patterns as well as measures of directional distribution for the analysis of oriented texture will be explained. Several applications will be demonstrated, including analysis of calcifications, masses, asymmetry, and architectural distortion in mammograms, as well as analysis of healing of ligaments via remodeling of collagen and blood vessels.

**Lecture Notes:** [http://people.ucalgary.ca/~ranga/enel697/](http://people.ucalgary.ca/~ranga/enel697/)
Invited Talk

[13:30–15:00] “Advances and Progresses in Hospital Information Systems”
Speaker: Marco Antonio Gutierrez
Instituto do Coração (InCor) - University of São Paulo, Brazil
http://www.incor.usp.br/spdweb/pessoas/marco_gutierrez.htm

Abstract: After more than one decade in the 21st century, for the vast majority of patients, a simple consultation, prescription or an exam report is still based on a collection of papers with details of his or her clinical history. This paper based collection of health registers may difficult the exchange of information between actors in the health system may induce errors in the decision process and also may turn the assistance process inefficient. However, this well-known scenario in most of the hospitals can be minimized with the use of Information Technology (IT). The use of IT in the assistance process has the potential to reduce dramatically the number of fails involved in a paper based process and also contribute to the reduction of costs in the Healthcare system. The advances and progresses in hospital information systems (HIS), as a tool to support the assistance processes, have been contributed to change this typical scenario and this talk will cover the principal steps, barriers and strategies in the HIS adoption, as well as its contribution to change the patient care.

Poster Presentation – Workshop for Ongoing Projects (WoP) at CBMS 2015
Chair: Paulo M. Azevedo-Marques
Room: Auditorium CEAPS at Clinical Hospital at Ribeirão Preto of University of São Paulo (USP) - 16:00/17:30

- Human Centric ICT Support to Young Persons with Mental Disorders
  Bo Hu, Aisha Naseer

- A Risk Analysis Model for PACS Environments in the Cloud
  Saulo da Silva Cordeiro, Paulo Mazzoncini de Azevedo-Marques, Fábio Sant’Ana, Kátia Suzuki

- A Reference Architecture for Healthcare Supportive Home Systems
  Lina María Garcés Rodríguez, Apostolos Ampatzoglou, Paris Avgeriou, Elisa Yumi Nakagawa

- Automatic Pulmonary Abnormality Screening using Thoracic Edge Map
  K.C. Santosh, Szilard Vajda, Sameer Antani, George Thoma

- Prehospital Eletronic Record with use of Mobile Devices in the SAMU´s Ambulances in Ribeirão Preto-Brazil
  Alexandre Freitas Duarte, Hilton Vicente César, André Luís Mendes Marques, Paulo Mazzoncini de Azevedo-Marques, Gerson Alves Pereira Júnior
Designing Medical Interactive Systems via Assessment of Human Mental Workload
Luca Longo

Technology Enhanced Integration of Hospital and Primary Care in the M’boi Mirim Neighborhood of São Paulo City
Alexandre Hannud Abdo, Ana Delgado, Ana Mafra, Tatiane Ocon Nascimento, Mario Bracco

Automatic Classification of Cancer Tumors using Image Annotations and Ontologies
Edson F. Luque, Daniel L. Rubin, Dilvan A. Moreira

Exploiting Evolutionary approaches for Content-Based Medical Image Retrieval
Reginaldo Rocha, Priscila T. M. Saito, Pedro H. Bugatti