



The Washington Academy Of Biomedical Engineering
2004-2005 Workshop Series

cosponsored with:

The Department of Electrical and Computer Engineering
The George Washington University

Geometrical and Physical Models in Medical Image Analysis: Fundamentals and Clinical Applications

Presentations by:

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Yale University

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Professor and Interim Chairman, Department of Urology
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Monday, November 15, 2004 from 4:30 pm - 6:30 pm (Reception following)

The Marvin Center, 3rd floor Amphitheatre

The George Washington University

21st and H Streets NW, Washington, DC

Metro: Foggy Bottom/GWU

Parking: GW garage, 22nd and I Streets

For further information, contact the registration coordinator, Kenneth H. Wong, Ph.D., at 202-784-1521. This workshop is supported in part by grants from the U.S. Army TATRC (Telemedicine and Advanced Technology Research Center) and The Whitaker Foundation. The workshop is free and open to the public. The Marvin Center is an accessible facility.

Workshop Abstract:

The development of methods to accurately and reproducibly recover useful quantitative information from medical images often is hampered by uncertainties in handling these data related to: image acquisition parameters, the variability of normal human anatomy and physiology, the presence of disease or other abnormal conditions, and a variety of other factors. This talk will review image analysis strategies that make use of models based on geometrical and physical/biomechanical information to help constrain the range of possible solutions in the presence of such uncertainty. The discussion will be focused by looking primarily at several problem areas in the realms of neuroanatomical structure analysis and cardiac function analysis, with an emphasis on image segmentation and motion/deformation tracking.

The presentation will include a description of the problem areas and visual examples of the image datasets being used, an overview of the mathematical techniques involved and a presentation of results obtained when analyzing patient image data using these methods. Emphasis will be placed on how image-derived information and appropriate modeling can be used together to address the image analysis and processing problems noted above.

This workshop will look at progress in the field, from fundamentals to clinical applications, over the last 30 years and suggest some of the challenges that remain for the years to come.

About WABME:

The Washington Academy of Biomedical Engineering, founded in 2003, is a consortium whose charter membership is composed of faculty from academic institutions in Washington, D.C.: The George Washington University, Catholic University of America, Georgetown University, and Howard University. The goal of WABME is to promote collaboration, research, technology transfer, and education in biomedical engineering. This collaborative endeavor is designed to strengthen existing BME research programs and to create new scientific pathways for future discovery.

WABME will host four topical workshops each year to bring together "problem-rich" biomedical disciplines and the "solution-rich" engineering and scientific communities. A central goal of each workshop is to explore a biomedical research issue with sufficient depth and breadth to serve as the foundation work for a biomedical research grant proposal. Faculty from the host institution will identify a comprehensive topic area for scientific exploration. A panel of nationally recognized content experts will frame the issue by presenting challenging ideas or clinical problems, offering biomedical research strategies, and/or potential research-driven solutions for the clinical problems. Their presentations will be followed by a discussion involving all participants, and a reception.

The workshops welcome participation by engineers and scientists from universities, area biomedical and biotechnology firms, research organizations, and federal laboratories and agencies. The intent is that each workshop will lead to the creation of one or more interdisciplinary research teams to solve an important problem in biomedical engineering. In turn, this will foster collaboration among the WABME academic institutions, private industry, and government agencies in the D.C. area.

Further information is available at www.wabme.org