POSTDOCTORAL OPENING IN ULTRASONIC IMAGING

It is anticipated that a postdoctoral position in the area of ultrasonic imaging will be available in the Department of Electrical and Computer Engineering at Northeastern University in Boston MA USA starting in mid-summer of 2006. The ideal candidate will have a PhD in an area such as acoustics, electrical engineering, mechanical engineering or physics with experience in algorithms development for imaging/inverse problems and experimental data collection and processing.

The objective of the work here is the development, and implementation using commercial instrumentation, of a new approach by which ultrasonic imaging can be used to guide high intensity focused ultrasound (HIFU) treatment of cancer. HIFU has shown considerable promise in recent years as a hyperthermia-based tool for successfully treating a range of cancers. HIFU is limited however by difficulties in non-invasively monitoring the progress of the treatment to control the size, shape, and extent of the thermal lesion. To address these issues, we have assembled a university-industrial consortium led by Northeastern University and comprised of participants from Boston University, the National Center for Physical Acoustics at the University of Mississippi, and Analogic Corporation. Our team currently employs a model-based approach to the problem of lesion characterization wherein the data collected by the imaging transducer are used to estimate parameters directly related to the size, shape, location, orientation, and contrast of the HIFU-induced lesion. Our initial results indicate the ability of this method to identify lesion-like regions under carefully controlled experimental conditions. The foci of the current project include: 1/ more extensive phantom and ex vivo experimental evaluation of our current technology; 2/ the development and experimental evaluation of new imaging methods capable of addressing HIFU monitoring scenarios including multi-lesion imaging and tracking of lesion formation; and 3/ initial implementation of all methods to state-of-the-art hardware platforms for eventual use in real-time treatment monitoring. Validation of the performance of the lesion characterization algorithms and the utility of the optimization approaches will take place using state-of-the-art ultrasound imaging instrumentation built by Analogic Corporation.

The project is expected to last two years. Appointment for this job will be on a year-by-year basis.

For more information about this position, please contact

Prof. Eric Miller  
Dept. of Electrical and Computer Engineering  
315 Stearns Center  
Northeastern University  
360 Huntington Ave  
Boston MA 02115  
email: elmiller@ece.neu.edu  
Web: http://www.ece.neu.edu/faculty/elmiller/elmhome/

Interested candidates should provide (preferably via email) Prof. Miller with a copy of their CV, list of references, and copies of relevant articles, theses, technical reports etc.

Northeastern University is an Equal Opportunity/Affirmative Action, Title IX, educational institution and employer and particularly welcomes applications from minorities, women and persons with disabilities. Go to www.neu.edu/hrm for more information.