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1) VIII LFT-päivä Kuopion yliopistolla 12.2.2009

Lääketieteellisen fysiikan ja tekniikan yhdistys (LFTY) järjestää kahdeksannen LFT-päivän Kuopion yliopistolla 12.2.2009. LFT-päivän ideana on aktivoida uusia nuoria jäseniä yhdistykseen sekä parantaa tutkimuksen ja opetuksen yhteistyömahdollisuuksia tuomalla eri paikkakuntien tutkimusta ja opiskelijoita yhteen. Tapahtumassa järjestetään yhdistyksen alaan kuuluvien vuonna 2008 tehtyjen diplomitoiden ja pro gradujen posterinäyttely, jossa parhaat posterit palkitaan (2008 € stipendi).

Tapahtumassa on opiskelijoiden lopputöiden lisäksi esityksiä, joissa kerrotaan järjestävän yliopiston lääketieteellisen fysiikan ja tekniikan osaamisalueista ja esitellään alalla toimivia yrityksiä. Pro gradu- ja diplomityöpostereiden lisäksi järjestäjät toivovatkin paikalle opetus- ja tutkimuslaitosten ja tutkijakoulujen omia esitteitä sekä esittelypostereita. Samoin alan yritysten esittelypisteet ovat tervetulleita.

Tärkeät päivämäärät

- 19.1.2009 Posterinäyttelyyn ilmoittautuminen
- 5.2.2009 LFT-päivään ilmoittautuminen
- 12.2.2009 LFT-päivä, Snellmania rakennus (sali L21), Kuopion yliopisto

Lisätietoja ja ilmoittautumisohteet

<http://www.lfty.fi>

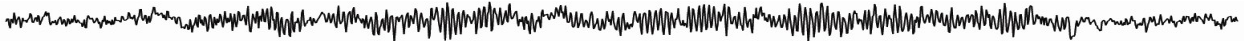
2) DI Jyrki Selinummi väittelee digitaalisen kuva-analyysin menetelmistä 19.12.2008

Väitöskirjatyössään DI **Jyrki Selinummi** on tutkinut digitaalisen kuva-analyysin menetelmiä solujen ja solun sisäisten ominaisuuksien mittaukseen sekä soluissa tapahtuvien muutosten seurantaan. Työssä on esitelty uusia menetelmiä, joilla solukuvista voidaan automaattisesti määrittää erilaisia solukohtaisia parametreja ja näin nopeuttaa soluista tehtäviä mittauksia. Työssä on lisäksi tutkittu kolmiulotteisen mikroskopian mahdollisuuksia solunsisäisten rakenteiden automaattiseen analysointiin. "Kolmiulotteisella mikroskooppikuvantamisella ja mittauksella pyritään määrittämään tutkittavien rakenteiden muoto aiempaa tarkemmin", toteaa Selinummi.

Diplomi-insinööri Jyrki Selinummen signaalinkäsittelyn alaan kuuluva väitöskirja On Algorithms for Two and Three Dimensional High Throughput Light Microscopy ("Menetelmiä kaksi- ja kolmiulotteiseen automaattiseen valomikroskopiaan") tarkastetaan Tampereen teknillisen yliopiston (TTY) tieto- ja sähkötekniikan tiedekunnassa perjantaina 19.12.2008 kello 12.00 Tietotalon salissa TB109 (Korkeakoulunkatu 1). Vastaväittäjänä toimii professori **Jussi Parkkinen** Joensuun yliopistosta. Tilaisuutta valvoo professori **Olli Yli-Harja** TTY:n signaalinkäsittelyn laitokselta.

Jyrki Selinummi (29) on kotoisin Janakkalasta ja työskentelee tutkijana Institute for Systems Biology:ssa Seattlessa sekä TTY:n signaalinkäsittelyn laitoksella.

Lisätietoja: [Väitöstiedote](#)



3) Employment opportunities



IEEE Engineering in Medicine and Biology Society

Employment Opportunity Notice

1 December 2008



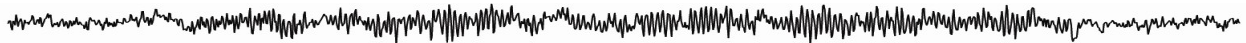
The Biomedical Imaging Group Rotterdam (www.bigr.nl) of the Departments of Medical Informatics and Radiology of the Erasmus MC - University Medical Center Rotterdam in the Netherlands is looking for candidates for

4 PhD-Student Projects in Biomedical Image Analysis

Through innovative fundamental and applied research, our group aims to develop and validate advanced techniques for the processing and analysis of large, complex, and heterogeneous medical and biological image data sets.

Project 1: Molecular Image Processing - From Cell to Organism

Molecular imaging is a new and hot field of research, aiming at the visualization, characterization, and quantification of biological processes at the cellular and molecular levels. Combined with anatomical and functional imaging, this enables in-depth studies of the molecular origins of diseases, in relation to their effects at the organ and whole-organism level. These new imaging possibilities are having a significant impact on the basic life sciences as well as human healthcare, through a better understanding of disease mechanisms, the development of new biomarkers for early diagnosis, and enhanced preclinical validation of novel treatments in small-animal models as a first step towards clinical implementation. In this project, we will focus on one particular application of molecular imaging: the use of time-lapse magnetic resonance imaging (MRI) to study the effects of stem-cell therapy in



restoring myocardial tissue and function after a heart infarction. The aims are to develop and validate new algorithms for image alignment and object tracking at both the cellular and the organ level, in order to visualize, characterize, and quantify dynamic processes.

Project 2: Multi-Modal Oncological Image Analysis

This project focuses on multi-modal image analysis of tumors. With MRI, various functional characteristics of the tumor can be visualized and quantified in vivo, for example the vascular supply and micro-vascular characteristics in tumors, such as blood volume, blood flow and endothelial permeability, the oxygenation status, and tumor cell viability. With SPECT/CT, the distribution of small radioactive proteins (peptides), which bind specifically to their receptors on a tumor, can be visualized and quantified. These radioactive peptides can be used to detect the tumor and to irradiate and kill the tumor. In this project we aim to document/map the influence of the local tumor properties, as visualized and quantified by MRI, on the distribution of radionuclide peptides, as visualized and quantified by SPECT/CT. This knowledge is necessary to improve the therapy and to optimize and adjust the therapy for the individual patient. To this end, new image processing algorithms need to be developed to enable quantification and integrated analysis. These range from segmentation, registration, time-sequence analysis, to advanced statistical and pattern recognition methods.

Project 3: MR Brain Image Analysis: Early Markers of Neurodegenerative Disease

MR images of the brain reveal evidence of neurodegenerative diseases such as Alzheimer's disease already before clinical symptoms appear. For instance, some brain structures are slightly smaller in people who will develop dementia later on. Such image based markers are of enormous importance for early diagnosis and may lead to improved treatment in an early stage. The Erasmus MC performs a large scale image based study of the aging brain to investigate the complex neurodegenerative patterns involved in the development of dementia as well as in normal aging. Within this study, multi-sequence MR brain data of approximately 5500 participants is collected at intervals of three years. The aim of this project is to develop model based segmentation techniques to automatically analyze brain structures in a large number of images, and to use machine learning techniques to derive image markers, related to the shape, size, and appearance of brain structures, that can help in recognizing early onset and predicting future development of dementia.

Project 4: 3D Cardiac Image Analysis

Medical imaging techniques, such as MRI, CT, and SPECT, can provide information about the anatomy and function of the heart. In this project, methods will be developed and evaluated to integrate 3D models of the coronary artery tree, as derived from CTA data, with myocardial perfusion, as derived from MRI.

Requirements

Applicants should have a Master's degree in any of the following (or related)



fields: physics, electrical engineering, mathematics, biomedical engineering, or computer science. Experience with image processing/analysis methods and affinity with medical imaging is an advantage. For the project on MR Brain Image Analysis, experience in machine learning is also an advantage. You should be familiar with computer programming in C++ or Java. Also, you should be able and motivated to work in a multidisciplinary team.

Conditions

Our institute is internationally at the forefront of biomedical imaging, and offers a dynamic, challenging, and cooperative research environment, in which you can further build on your talents. As a PhD student you will get a temporary position of four years (full-time), with a salary according to the PhD salary scale of the University Medical Centers in the Netherlands.

Application

Please send your motivation letter, curriculum vitae, list of followed courses and grades, and copies of papers and theses (in English) that you have written, by email to vacancies@bigr.nl before December 15th, 2008. The preferred format is PDF, and we recommend that you attach a single PDF document that contains all elements listed above. Please include your name in the file name of any document you send.

4) Niilo Saranummi selected as IEEE Fellow

IEEE Engineering in Medicine and Biology Society

Press Release

For Immediate Release

IEEE Engineering in Medicine and Biology Society Announces

Members selected as 2009 IEEE Fellows

Piscataway, NJ - November 19, 2008

The IEEE Board of Directors approved and announced the 2009 Class of IEEE Fellows at the Board of Directors meeting last week in New Brunswick, NJ.

The IEEE Fellows are an elite group from around the globe.



The grade of Fellow recognizes unusual distinction in the profession and shall be conferred by the Board of Directors upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interest. The accomplishments that are being honored shall have contributed importantly to the advancement or application of engineering, science and technology, bringing the realization of significant value to society.

The total number of Fellows selected in any one year does not exceed one-tenth of one percent of the total voting Institute membership.

Please join us in congratulating EMBS members who will be elevated as an IEEE Fellow on 1 January 2009!

Susan Hagness

University of Wisconsin-Madison

"for contributions to time-domain computational electromagnetics and microwave medical imaging"

Metin Akay

Arizona State University

"for contributions to biomedical signal modeling and processing"

Louis Durand

IRCM

"for contributions to instrumentation and methods for assessing cardiovascular and respiratory diseases"

Xiaoping Hu

Georgia Institute of Technology and Emory University

"for development of spectroscopic and functional magnetic resonance imaging methodologies"

Sung-Cheng Huang

UCLA David Geffen School of Medicine

"for contributions to kinetic modeling and biological quantification in positron emission tomography"

Gregory Kovacs

Stanford University

"for contributions to fabrication and use of biosensors for medical, environmental and space applications"

Terence Peters

Robarts Research Institute

"for contributions to medical imaging and image-guided surgery"

Niilo Saranummi

VTT Technical Research Centre of Finland

"for leadership in biomedical engineering and biomedical information technology"



Kensuke Sekihara
Tokyo Metropolitan University
"for contributions to electromagnetic brain imaging"

Jayaram Udupa
University of Pennsylvania
"for contributions to medical image processing"

Sabine Van Huffel
Katholieke Universiteit Leuven
"for contributions to total least squares fitting and computational biosignal processing"

Lars Eriksson
Siemens Molecular Imaging
"for development of instrumentation and methodologies for molecular imaging"

Rashid Bashir
University of Illinois at Urbana-Champaign
"for contributions to development of micro-systems and nanotechnology for medical applications"

Paolo Fiorini
University of Verona
"for contributions to mobile robot navigation in dynamic environments"

Wesley Snyder
North Carolina State Univ. & Army Research Office
"for contributions to education in robotics and computer vision"

Tulay Adali
University of Maryland
"for contributions to nonlinear and complex-valued statistical signal processing"

For a complete list of IEEE EMBS Fellows please visit the IEEE Fellows website at:

<http://www.ieee.org/web/membership/fellows/Societies/EMB.html>

About IEEE Engineering in Medicine and Biology Society

The IEEE Engineering in Medicine and Biology Society (EMBS) is the world's largest international society of Biomedical Engineers. With more than 46 percent of its 8,200 members residing in some 70 countries around the world, it's a true global connection, bringing you access to the most fascinating people, practices, information, ideas, opinion, and fellowship from one of science's fastest growing fields.



IEEE Engineering in Medicine and Biology Society

Donna Hudson

EMBS President 2007-2008

IEEE Engineering in Medicine and Biology Society

Laura J. Wolf

Executive Director