Graduate study leading to the PhD in Computer Science & Informatics with a concentration in Biomedical Informatics

The Biomedical Informatics concentration (BMI) focuses on the effective use of biomedical data, information and knowledge for biomedical and clinical research, as well as decision support, driven by efforts to improve human health. Graduates will find careers in teaching and research facilities of educational and medical institutions; industry and hospitals; and law and government regulatory agencies. Graduate study will comprise of developing advanced computational techniques and strategies that directly impact patient care and clinical and biomedical research. This is a multidisciplinary concentration, jointly administered by the Departments of Mathematics and Computer Science, Biomedical Informatics, Biostatistics and Bioinformatics and Emory’s Center for Comprehensive Informatics.

FACULTY AND RESEARCH AREAS

Joel Saltz, MD, PhD, Duke, 1985  
biomedical informatics, computational grids

Andrew Post, MD, PhD, Pittsburgh, 2006  
clinical informatics/data warehousing

David Gutman, MD, PhD, Emory, 2005  
nanoscience, digital pathology, radiology

Tahsin Kurc, PhD, Bilkent (Turkey), 1997  
high-performance data-intensive computing

Ashish Sharma, PhD, USC, 2005  
medical imaging, massive data processing

Fusheng Wang, PhD, UCLA, 2004  
heterogeneous scientific data management

Lee Cooper, PhD, OSU, 2009  
computer vision, large-scale image analysis

Carlos Moreno, PhD, Emory, 1998  
translational cancer bioinformatics and systems biology

James Nettles, PhD, Emory, 2005  
novel drug discovery for HCV and HIV

DuBois Bowman, PhD, UNC Chapel Hill, 2000  
Biostatistics and neuroimaging

Zhaohui (Steve) Qin, PhD, Michigan, 2000  
statistical genetics and genomics

Lance Waller, PhD, Cornell, 1992  
statistical analysis of spatially referenced data

Eugene Agichtein, PhD, Columbia, 2005  
information retrieval, text and data mining

James J. Lu, PhD, Northwestern, 1992  
constraint processing, data integration

James Taylor, PhD, Penn State, 2006  
computational biology, genomics, machine learning

Li Xiong, PhD, Georgia Tech, 2005  
data privacy and security, data management

Alfredo Tirado-Ramos, PhD, Amsterdam, 2007  
distributed biomedical informatics

S AMPLE COURSES

BMI 500: Introduction to Biomedical Informatics
BMI 501: Fundamentals of Clinical Environments
BMI 502: Intro to Clinical and Translational Informatics
BMI 512: Biomedical Image Processing
BMI 513: Machine Learning and Clinical Informatics
BMI 515: Imaging Informatics
IBS 574: Computational Biology and Bioinformatics
CS 554: Database Systems
CS 570: Data Mining
CS 573: Data Privacy and Security
CS 574: Fundamentals of Machine Learning
BIOS 500: Statistical Methods I

ONGOING PROJECTS

Mining and fusing textual data for improving patient status prediction
Modeling and mining massive deep-sequencing data to gain insights on areas ranging from transcription regulation to pathogenesis of complex diseases
Clinical data warehouses, semantic and temporal data modeling, human-computer interfaces for investigators to extract electronic health record data
Integrative analysis of radiology, pathology, “omics” and outcomes
Natural Language Processing in biomedicine, conceptually indexed clinical document repositories, integrated query and mining of textual and discrete data
Developing tools to support an exploratory model of data analysis for researchers to effectively browse data sets
Developing systems software and middleware for high-performance I/O and data management for data-intensive applications

For more information: bmi@emory.edu
http://www.bmi.emory.edu/bmiphdprogram

Students admitted to the PhD program are awarded full tuition and stipend support. The level of support is based on qualifications and performance. In addition, special fellowships and professional development support funds are available to admitted students on a competitive basis.
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