

Biomedical and Health Informatics Lecture Series

Tuesday, November 15, 2011

12:00 - 12:50 p.m., Room I-132

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University of Washington

“Current Research in the UW Structural Informatics Group”

The information explosion in biomedicine has led many to envision a world-wide network of integrated biomedical data and knowledge that efficiently brings relevant information to the classroom, the bedside, and the research bench, while fostering the rapid translation of new research results to education and clinical care. The long-term goal of the University of Washington Structural Informatics Group (SIG) is to contribute to this vision by developing a structural information framework for biomedicine, and by using this framework as a basis for managing, integrating and visualizing heterogeneous and widely distributed biomedical knowledge and data. Our rationale for this approach is that the structure of the body is the most useful means for organizing and hence managing biomedical information, since most manifestations of health and disease are properties of anatomical entities. To realize such a framework our research challenges are how to represent the structure of the body in such a fashion that other information can be organized around it, and how to use this representation to manage, integrate and visualize biomedical information within the context of specific applications. In this talk I will describe some of our current research to meet these challenges, with emphasis on efforts to make our Foundational Model of Anatomy (FMA) ontology the anatomy hub for many standard terminologies and ontologies, open source data management tools for clinical research, a Query Integrator application (QI) that ties web sources together into a Query Web, and ontology-based 3-D scene generation based on the FMA and QI. Current driving applications for these projects include anatomy education, craniofacial malformations, brain mapping, image retrieval, proteomics, and translational medicine. Most of the projects are collaborations within and outside the UW.

Dr. Brinkley received a BA in math from Amherst College, an MD from the University of Washington, and a PhD in medical computer engineering from Stanford University. His initial work was in 3-D reconstruction of anatomical objects from ultrasound using spatial knowledge of anatomy. These methods were then applied to 3-D protein structure determination from NMR. On returning to the UW he applied these methods to 3-D brain reconstruction from MRI, as part of the national Human Brain Project. He coined the term, “Structural informatics” in 1991, and together with Cornelius Rosse, co-founded the UW Structural Informatics Group, which he now directs. His current primary interest is in applying a structural information framework to the problems of data management, integration and visualization. He is a fellow of the American College of Medical Informatics, and has served on the editorial boards of the Journal of the American Medical Informatics Association, the Journal of Biomedical Informatics, and Methods of Information in Medicine. He has also served on several NIH and other advisory boards and study sections.