



Biomedical and Health Informatics Lecture Series

Tuesday, May 19, 2009

12:00 - 12:50 p.m., Room T-498

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“An Application of Theory to Practice: Biosimulation for Blood Transfusion Decisions”

Our research group has worked to develop theories that underpin knowledge representation for biosimulation models. A goal of our theoretical work is to support improved modeling practices such as modularity, unambiguous semantic annotation of models, and the ability to build complex, multi-scale, multi-domain biosimulation models. Augmenting this theoretical work, we recently began a collaboration with clinicians interested in the problem of transfusion management in pediatric surgery.

The transfusion of blood is the most common interventional procedure carried out in US hospitals, totaling 30 million transfusions and accounting for about \$8.3 billion in 2006. Unfortunately, physicians do not have objective methods for predicting patients' bleeding risks, and therefore their transfusion needs. Thus, a goal of our research is to better understand the processes of bleeding, coagulation, and transfusion. In this presentation, I will sketch how our theory of semantics for modular biosimulation modeling can be applied to the practical, clinical problem of decision support for transfusion management.

John Gennari, PhD, received his doctorate in Computer Science (in artificial intelligence) in 1990, and has been carrying out research in biomedical informatics since 1994, when he began working as a research scientist in the Stanford Medical Informatics group. His primary research focus is in knowledge representation and especially knowledge sharing. John is extensively published in the Biomedical Informatics literature, in application areas as diverse as clinical trial protocol management, health care guidelines, and cell-signaling pathways. Dr. Gennari joined the BHI faculty in 2002.