Biomedical and Health Informatics Lecture Series

Tuesday, May 11, 2010
12:00 - 12:50 p.m., Room RR-134

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"Semantic web technologies and a library of reusable synthetic biology parts"

Synthetic Biology is a new field that applies engineering principles to biology and aims to construct novel and complex living systems. The synthetic biology research community is strongly committed to an open-source, sharing philosophy for research. In addition, they have adopted the engineering principle of developing standardized modules that can be shared and reused. Thus, this provides a great opportunity to test and deploy knowledge technologies, such as the semantic web, that support reuse and knowledge sharing.

In this talk, I will report on our group's work to date in this domain. In the long term, our goal is to help synthetic biology researchers understand how the processes that they build interact and fit together both with each other and with the native processes of the host cell. In the shorter term, we believe that semantic web technologies can provide useful and interesting information retrieval capabilities, as well as inference that supports consistency checking. To date, our results include the creation of a representation for synthetic biology parts (building blocks), as well as a library, populated with ~3500 parts stored in an RDF format. We have successfully solicited interest in the use of this library from several synthetic biology labs, including collaborators at UC-Berkeley.

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.

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