

NIH Summer Research Program 2007

POSTER TITLE: Statistical Knowledge Discovery in Medical Data Sources

MENTOR: Jim DeLeo, Chief, Scientific Computing Section, DCRI, NIHCC

NIH AFFILIATION: Scientific Computing Section, DCRI, NIHCC (2007 Summer Intern)

NON-NIH AFFILIATION: The University of Kansas, Lawrence, KS (Ph.D. Computer Science)

THE IDEA IN BRIEF:

This poster presents an intelligent algorithm that can be used to detect significant patterns in medical data sets. These patterns will provide further insight into the data set and provide information that can be used for further research and to improve patient care.

ABSTRACT:

Developing intelligent tools to extract information that supports research and decision-making has been of critical importance in fields such as knowledge discovery, information retrieval, pattern recognition, databases, and increasingly in medicine and biology. Quantitative and intelligent biomedical data analysis is a fast-growing interdisciplinary area of applied computer science, artificial intelligence, and biomedical science with the potential of introducing very important developments in these fields. Looking for complex patterns within large biomedical data repositories and discovering previously unexpected associations can be of particular interest for understanding the physiology and functionality of the human body as well as tracing the roots of several diseases. In the context of a research hospital these analyses may lead to further directed research, better diagnostic capabilities, and improved patient outcomes.

PURPOSE:

Our purpose is to develop and demonstrate an algorithm to provide biomedical researchers a computational methodology that identifies patterns in medical data in order to better understand the data, and to either gain new medical knowledge to improve patient care, or to at least suggest new hypotheses worthy of further exploration.