Tutorials (Pre-Sessions) at ICCS 2012, June 3, Sunday 2012
Embassy Suites Omaha - Downtown/Old Market.

This year we are excited to announce separate pre-conference sessions for tutorials at ICCS. Tutorials will be held a day prior to the main conference on Sunday, June 3rd, 2012. Four tutorials in five sessions are invited on cutting edge topics that will expose interested conference delegates and local practitioners to hands-on activities relating to new areas of computational sciences.

The tutorials are free for all ICCS participants. We thank for the generous support of the College of Information Science and Technology, University of Nebraska at Omaha!
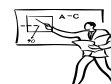
Yong Shi, Chair of ICCS 2012 Tutorials

Tutorials Schedule

Sunday June 3, 2012
08:30-10:30

Tutorial 1 **Network Analysis of High-Throughput Biological Data – Part A** (Room Elkhorn A&B)
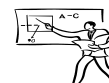
Hesham H. Ali, *University of Nebraska at Omaha*
Kathryn Dempsey, *University of Nebraska Medical Center*

Abstract: This tutorial is designed to give attendants an understanding of the theory and application behind networks in systems biology. The network model is gaining popularity as a powerful tool for analysis of high-throughput data and yet there remain many opportunities for innovation within this growing branch of systems biology. Data mining within the network model offers a novel type of mechanistic representation in systems biology, allowing for viewing the levels of cellular machinery at multiple resolutions. This tutorial will cover the basic types of networks currently used in systems biology, how these networks are created, and the graph theoretic concepts involved in mining biologically relevant information from network structure. Further, the workshop will cover how the integration of heterogeneous network models allows the user to identify processes behind changes in phenotype, from aging or normal versus diseased states. A brief review of other network applications in biomedical research (i.e. epidemic prediction using social networks) will be covered, as there exist multiple crossovers between applications of graph theory in real-world networks. This workshop may be of interest to those who are interested in creation and analysis of network models, and further how graph theory and network structure related to observed biological functions within the cell.

Tutorial 2   **TEI@I Methodology and Applications in Economic Analysis and Forecasting** (Room Big Blue A &B)
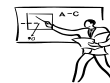
Shouyang Wang, *Chinese Academy of Sciences*

Abstract: In this lecture, a new methodology for studying complex systems is introduced. The methodology is illustrated via forecasting crude oil price. Some other applications of this methodology to economic analysis and forecasting are also reported.


10:30-12:30

Tutorial 3 **Network Analysis of High-Throughput Biological Data – Part B** (Room Elkhorn A&B)

Hesham H. Ali, *University of Nebraska at Omaha*
Kathryn Dempsey, *University of Nebraska Medical Center*

Abstract: This tutorial is designed to give attendants an understanding of the theory and application behind networks in systems biology. The network model is gaining popularity as a powerful tool for analysis of high-throughput data and yet there remain many opportunities for innovation within this growing branch of systems biology. Data mining within the network model offers a novel type of mechanistic representation in systems biology, allowing for viewing the levels of cellular machinery at multiple resolutions. This tutorial will cover the basic types of networks currently used in systems biology, how these networks are created, and the graph theoretic concepts involved in mining biologically relevant information from network structure. Further, the workshop will cover how the integration of heterogeneous network models allows the user to identify processes behind changes in phenotype, from aging or normal versus diseased states. A brief review of other network applications in biomedical research (i.e. epidemic prediction using social networks) will be covered, as there exist multiple crossovers between applications of graph theory in real-world networks. This workshop may be of interest to those who are interested in creation and analysis of network models, and further how graph theory and network structure related to observed biological functions within the cell.

Tutorial 4 **Introduction to Hadoop using Java and R** (Room Big Blue A &B)
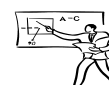
S.G. Golla, *Gallup Inc*

Abstract: Apache Hadoop has become the default platform for solving all kinds of data intensive applications. In this tutorial, we are going to discuss all the basics about Apache Hadoop and its corresponding architecture. We will describe some basic use cases of Hadoop along with examples. We will discuss about some common data intensive use cases and go over their solutions in Hadoop. These solutions would be using Java and R. We will also briefly discuss about the other APIs/Software related to Apache Hadoop ecosystem. R is an open-source programming language used for statistical computing.

13:30-15:30

Tutorial 5 **The Integer Lattice Points in the Newton Polyhedron** (Room Elkhorn A&B)
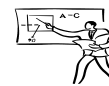
Ibrahim Al-Ayyoub, *Jordan University of Science and Technology*

Abstract: Let $S=\{a_{i}e_{i}; i=1,\ldots,n\}$ with $a_{1},\ldots,a_{n}$ positive integers. The Newton polyhedron (convex hull of S) of S is the convex hull in R. The main result of this paper is producing an algorithm for computing the set of all integer lattice points in the Newton polyhedron of S.

Floor Map

Banquet Service Hallway

Half Rds of 8 = 196 Seats

Theater Style = MAX is 300 Seats

Elkhorn C

Elkhorn B

Elkhorn A

Big Blue C

Big Blue B

Big Blue A

Break Station

Break Station

Platte

Missouri

Break Station

Break Station

Prefunction Area

Council Bluffs B

Council Bluffs A

Phones

Restrooms

Reg. Desk

Covention
Entrance/Exit

Riverfront Ballroom
Embassy Suites
Omaha / Old Market
555 S. 10th St.
Omaha, NE 68102
(402) 346-9000
Fax (402) 346-4238

coatroom

Council Bluffs B

Council Bluffs A

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International Conference
on Computational
Science (ICCS)

June 2012

FILE DETAILS:

Main Lobby : Entrance

Map of Embassy Suites Omaha - Downtown/Old Market

O! Locations

Downtown O! Walking Tour

Distance: approximately 2.2 miles

For some great exercise and some even better sightseeing, take this one-hour walking tour through historical Omaha to visit all five Downtown area O! sculptures. Follow the path of O!s on the sidewalk to begin and end at the Greater Omaha Area Chamber of Commerce on 13th & Harney.

At **Alegent Health**, we believe that a healthy community is a well-rounded community, with health and wellness opportunities, cultural enrichment and a strong sense of community spirit. Through our sponsorship of the O! Public Art Project, we hope to bring these dimensions together, using art to uplift the spirit and enrich health and community pride.