Box's bio

Dr. Chokchai "Box" Leangsuksun is the SWEPCO Endowed Professor and an associate professor in computer science and the Center for Entrepreneurship and Information Technology (CEnIT) at Louisiana Tech University. He received the Ph.D. and M.S. in computer science from Kent State University, Kent, Ohio in 1989 and 1995 respectively.

His research interests include

- Resilience and High Performance Computing
- Intelligent component based Software Engineering
- Service-Oriented Architecture, Service engineering and management

Prior joining Louisiana Tech University in early 2002, Box was a member of Technical Staff, Lucent Technologies-Bell Labs Innovation, from 1995-2002 and was responsible in many key research and development roles in various strategic products. Within a short academic time span, Box has established his name and research recognitions by founding and co-chairing a high availability and performance workshop, serving as program committee in various international conferences/workshops, releasing open source software, writing articles featured in major technical journals/magazines, and giving presentations in highly-regarded conferences. He has also collaborated with various research groups and national and industrial labs, which include Oak Ridge National Lab, Los Alamos, Sandia, Lawrence Livermore, Dell, Intel, and Ericsson etc.

In September 2003, he received an outstanding teaching award from the college of Engineering and Science, Louisiana Tech University.

After Hurricane Katrina landfall, few phones worked and many people could not find each other. Box with a group of his students built a searchkartina.org website that allowed people entering the name of someone they wanted to locate. The website had collected more than 25,000 entries and more than 10,000 visits in few days.

Title: ***Current Trends & Technologies in High Performance Computing.***

Abstract

High Performance and Grid computing are essential technologies for enabling breakthrough science and for advancing economic and business developments, especially in today's digital world. Time to market, time to insight, and time to discovery are prime objectives of HPC and grid applications. Examples of such applications are high-energy physic, computational fluid dynamic, bioinformatics, search engine, telecommunication services, military and space applications, drug discovery as well as perhaps critical warning systems (e.g. for tsunami or hurricane).

Nevertheless, there are many challenges lie in a wide spectrum of obstacles such as mismatches in the technological advancements of hardware and software components, programmability, system reliability, and robustness, especially in very large scale systems. In this talk, Box will discuss a current trend and technologies in high performance computing. He covers from common cluster computing, multicore technologies to constellation architecture including Cell processor (PS3) and a mixed mode of GPU and traditional CPU.

Sumeet Dua, Ph.D.
Associate Professor of Computer Science, Upchurch Endowed Professor,
Coordinator of IT Research, College of Engineering and Science, Louisiana Tech University.
Adjunct Associate Professor of Research, School of Medicine,
Louisiana State University Health Sciences Center, New Orleans, LA, USA.

Dr. Sumeet Dua is currently Upchurch Endowed Associate Professor and Coordinator of IT Research at Louisiana Tech University, Ruston, LA. He is also the adjunct faculty in School of Medicine, Louisiana State University Health Sciences Center, New Orleans. National Science Foundation (NSF), National Institutes of Health (NIH), Air Force Research Laboratory (AFRL) and Louisiana Board of Regents (LA-BoR) fund his research. He has generated over $2.4 million dollars of extramural funding in the past 5 years to support his research and served as a participating investigator in federal projects in the amount of over $15 million dollars. He recurrently serves as a study section member of Special Emphasis Study Section at National Institutes of Health (NIH) and served as a panelist for National Science Foundation. He is frequently invited to give talks at leading academic institutions, conferences and industry and serves on the Louisiana Board of regents speaking of science speakers' bureau. He has received numerous awards including Engineering and Science Foundation Award for Faculty Excellence awarded in 2006 and Faculty Research Recognition Award in 2007, and was granted early tenure and promotion in August 2007. He has advised over 22 graduate students who have found positions in leading industry and academic institutions, including IBM, Oracle and Philips research. His areas of expertise include database mining, pattern recognition, data warehousing, clinical informatics and bioinformatics had has several publications in the area. Dr. Dua is a Senior Member of the IEEE Computer Society, Senior Member of the Association for Computing Machinery (ACM), and member of SPIE, International Society for Computational Biology and American Association for Advancement of Science.

Protein Data Mining and Feature Fusion for Bioinformatics Applications

Abstract

One of the daunting challenges facing Biology, and consequently multidisciplinary research in Computer Science, is to assign biochemical and cellular functions to the thousands of hitherto uncharacterized gene products discovered by several international gene-sequencing projects. These research endeavors are producing high dimensional, heterogeneously distributed data at an unprecedented rate, much more rapidly than the corresponding development of computational techniques capable of novel knowledge analysis and discovery. Data mining offers the promise of precise, objective, and accurate in-silico analysis of this emerging data using knowledge discovery routines that reveal embedded patterns, trends, and anomalies in order to create models for faster and more accurate physiological discovery. Protein structure classification and comparison has become a central area in the field of bioinformatics. Proteins serve as one of the major structural elements of living systems and their interactions determine most of the molecular and cellular operations within these systems. The quantity, complexity, and availability of protein structure databases has been increasing at a nearly exponential rate, leading to the demand for the development of automatic and expeditious techniques for protein structure comparison, classification, modeling, and functional prediction.

The determination of a protein's structure and function from its amino acid sequence has also provided an exciting challenge. Successful methods for the categorization of protein structural classes from sequence information involve multiple physio-chemical properties and machine learning algorithms. In this presentation, I will present novel data mining algorithms for three-dimensional (3D) structure-based classifications of proteins that we have developed that use a coherent feature space derived from the multidimensional stereo-chemical property scales of proteins to accurately determine hydrophobic cores and to classify structures in a supervisory fashion. Our results demonstrate that discriminatory residue interaction patterns shared among proteins of the same family can be employed for both the structural and the functional annotation of proteins. Extensive experimentation demonstrates much enhanced results with boosted specificity and sensitivity of protein structural classification comparing the novel feature sets to the previous results in the area. The presentation will conclude with some directions for future investigation and improvement.