NATIONAL UNIVERSITY OF SINGAPORE

School of Computing

C S S E M I N A R

Title: **RE-PLAN: A Computational Framework for Response Plan Design and Analysis**

Speaker: Armin R. Mikler, PhD
Department of Computer Science in Engineering
Center for Computational Epidemiology and Response Analysis
University of North Texas

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Venue: Video Conference Room, COM1-02-13

Chaired by: Dr Rosenblum, David S., Provost's Chair Professor, School of Computing (david@comp.nus.edu.sg)

Abstract:

Emergencies stemming from the accidental or deliberate release of harmful biochemical substances demand timely response to minimize potential harm to affected populations. Therefore, local governments are required to maintain solid, functional plans for receiving medical countermeasures (MCMs) from the Strategic National Stockpile (SNS) and providing them to populations in need within short, federally-mandated timeframes.

Determining optimal placement of ad-hoc clinics purposed for the distribution of MCMs to target populations requires the integration of data representing geographic, demographic, and transportation characteristics. Therefore, the design and analysis of response plans represent a complex task necessitating the availability of computational tools. To this end, the RE-PLAN Framework has been developed to facilitate data driven response plan design and analysis while streamlining the planning process. This research has been supported by the National Institutes of Health (NIH 1R01LM011647-01 and NIH 1R15LM010804-01).

This talk will provide the highlights of RE-PLAN, a computational framework for placing facilities based on different optimization criteria. Further, computational methods to address plan limitations and access disparities resulting from specific demographic characteristics such as the distribution vulnerabilities in the population will be explored. Time permitting, the presentation will conclude with a demonstration of response plan development using the RE-PLAN system.

Biodata:

In 1997, Professor Mikler joined the Department of Computer Science at the University of North Texas with a PhD from Iowa State University. With the help of four courageous undergraduate students, he established the Network Research Laboratory (NRL), and with it, UNT's first Beowulf Cluster to facilitate complex simulations in support of the group's research on Computer Network Protocols and Distributed Systems. In addition to the inaugural group of students, who completed their MS theses under Dr. Mikler's guidance, the laboratory attracted many graduate students with interest in experimental design of protocols and algorithms for large distributed computing infrastructures. In 2004, Dr. Mikler started to gradually move into a new field of research, which was motivated by the need to facilitate advances in the field of Public Health and Epidemiology through computational methods. He established the Computational Epidemiology Research Laboratory (CERL) with focus on the development of computational methodology to model and simulate the spread of diseases and the design and analysis of bio-emergency response plans. Together with colleagues in Biology and Geography, Dr. Mikler established the truly interdisciplinary Center for Computational Epidemiology and Response Analysis (CeCERA) after receiving federal funds from the US Department of Health and Human Services. Today, CeCERA is the home of over 15 PhD students who are conducting research in a variety of areas related to Computational Epidemiology, Ecology, Social Network Analysis, and High Performance Computing under Dr. Mikler's mentorship. Recent graduates of his research group are using their expertise in Computational Epidemiology as faculty members at different universities and as researchers at National Laboratories. Dr. Mikler's research on response plan design and analysis is supported by the Texas Department of State Health Services (DSHS), the National Science Foundation (NSF), and the National Institutes of Health (NIH). He has supervised over 30 PhD and MS theses and has published over 70 research articles related to a range of topics, including distributed systems, networking, computational epidemiology, and response plan design and analysis.