

## **Computer Science Seminar Series, 2009**

### **National Capital Region**

## **Spatial Computing for Supporting Geographic Sciences**

**Speaker: Prof. Chaowei Yang**  
George Mason University

**Friday, September 4, 2009**  
**1:00PM- 2:00PM, NVC 325**

### **Abstract**

Single computer and generic high-end computing are not sufficient to conduct complex geographic science analysis and simulations, which can only be successfully supported through distributed computers and spatial principles that widely exist in natural sciences. Spatial computing refers to the computing that utilizes the spatial principles and distributed computers for enabling the advancements of geographic sciences. Spatial principles govern the interaction of different scientific parameters and phenomena by providing the spatial connections and constraints to drive the evolution of the parameters and phenomena. Therefore, spatial computing studies could better position us to leverage the spatial principles in simulating, and ultimately, advancing geographic sciences. I will present how spatial computing can be utilized to support geographic sciences with three research examples: a) enabling geographic data/services search, access, and utilization, b) utilizing high-performance computing to support computing intensive geographic science applications, c) facilitating 4D spatial data visualization.

### **Biography**

Chaowei Yang is an associate professor at George Mason University, where he founded and directs the Center for Intelligent Spatial Computing (CISC). He received his Ph.D. in Geographic Information Science from Beijing University in 2000 with Dr. Qi Li, and did his Postdoc in University of Calgary with Dr. Vincent Tao. He served national and international GIScience communities, including the NASA INCITS/L1 (U.S. ISO/TC211 organization) alternative, and co-founder and chair of the AAG CISG. He extensively researched, developed, and published on spatial computing over the past 10 years. He co-edited three special issues including distributed GIS (for the Journal/Annals of GIScience), distributed geographic information processing (for the International Journal of Geographic Information Science, IJGIS), and geospatial cyberinfrastructure (for the international journal of Computers, Environment, and Urban Systems, CEUS). He has served as PI and Co-I for over 15 projects funded by NASA, UCAR/NSF, FGDC, EPA, and NPS. He leads the deployment of a grid computing platform at GMU with 3TFlops computing power and 0.5T RAM, and with connection to the LamdaRail and SURAGrid. He is editing the Advanced GeoInformation Science book to be published by Taylor & Francis.