**David Hung-Chang Du:** Dr. Du is currently the Qwest Chair Professor of Computer Science and Engineering at University of Minnesota, Minneapolis. He has served as a Program Director at US National Science Foundation (NSF) CISE/CNS Division from March 2006 to September 2008. At NSF, he was responsible for NeTS (networking research cluster) NOSS (Networks of Sensor Systems) Program and worked on Cyber Trust (Internet Security) Program. He is also the Director of a NSF I/UCRC Center on Intelligent Storage. Dr. Du received a B.S. degree from National Tsing Hua University in 1974, an M.S. and Ph.D. degree from University of Washington (Seattle) in 1980 and 1981 respectively. He joined University of Minnesota as a faculty since 1981. Dr. Du has a wide range of research expertise including multimedia computing, mass storage systems, high-speed networking, sensor networks, cyber security, high-performance file systems and I/O, database design, and CAD for VLSI circuits. He has authored and co-authored over 275 technical papers including 130 referred journal publications in these research areas. He has graduated 57 Ph.D. and more than 100 M.S. students in the last 35 years. Dr. Du is an IEEE Fellow (since 1998) and a Fellow of the Minnesota Supercomputer Institute.  He is currently serving on the Editorial Boards of several international journals. He has also served as Conference Chair and Program Committee Chair for several major conferences in multimedia, networking, database, parallel/distributed computing and security areas. He has had research grants from many federal funding agencies including NSF, DARPA, ONR, and DOE. He has a strong tie with many industrial companies and his group is currently supported by IBM, HP, Dell, Veritas, NetApp, Cray, SGI, Seagate, SK-Telecom and ETRI (Korea).

**Future Infrastructure Support in Big Data Era**

**Abstract**

The Internet today has grown to an enormously large scale. Devices large and small are connected globally from anywhere on the earth. With the rapid advancement of technology, we now also have cheap and small devices with high computing power and large storage capacity. These devices like sensors and mobile devices are designed to improve our daily life by monitoring our environment, collecting critical data, and executing special instructions. These devices have gradually become a dominant part of our Internet. Many imaging, audio and video data are converted from analog to digital and digital data like sensor data and location data are generated at an alarming rate. As a result, unprecedented amount of data are available. How to manage and look for the desired information becomes a great challenge. How to preserve these data becomes a crisis. We can certainly say that we are in a big data era. In this talk, we will examine the challenges in developing infrastructure to support many emerging applications like service-oriented, location based, data access and management. In this talk, we will focus more the challenges of data management. What are the essential changes in data representation, information retrieval, storage systems and networking design will be discussed. We will also present a number of research projects that are currently under investigation in our NSF I/UCRC Center on Intelligent Storage. These projects include data deduplication, long-term data preservation, data archiving, and how to efficiently use non-volatile memory, solid state drives, shingle magnetic recording drives in the future infrastructure.