



IEEE Systems Council Chapter presents IEEE Distinguished
Lecture Series on

Secured data storage and transport on smart grid via wavefront multiplexing /demultiplexing

Speaker: Dr. Donald Chang, CEO of Spatial Digital Systems

Date: 5/3/2013 (Fri)

Time: 12:00 - 1:00pm

Location VEC 325, CSULB

Abstract: Security on data storage and transport are among many important concerns on cloud computing. Wavefront multiplexing/demultiplexing process (WF muxing/demuxing) embodying an architecture that utilizes multi-dimensional transmissions is the use of an algorithm for satellite and deep-space communications where transmissions demand a high degree of power combining, security, reliability, and optimization. It has found applications in fields beyond communications domain. One such application is data storage and transport on cloud. Multiple data sets are preprocessed by a WF muxing transformation before being stored /transported. WF muxed data is aggregated data from multiple data sets that have been “customized processed” and disassembled into *any* scalable number of sets of processed data, with each set being stored on a storage site. The original data is reassembled via a WF demuxing transformation after retrieving a *lesser* but *scalable* number of WF muxed data sets. In short, the WF muxed data storage solution enhances data security and data redundancy by, respectively, creating a new dimension to existing security/privacy methods and significantly reducing the storage space needed for data redundancy. In addition, WF muxing/demuxing methods enable a monitoring capability on the integrity of stored data. It becomes possible to identify independently whether the stored data is not contaminated or altered without scrutinizing through the data sets themselves.

About Speaker: Dr. Chang is the CEO for Spatial Digital Systems (SDS) to develop smart antenna technologies that enhancing today’s wireless communications. He retired from Hughes Electronics Company in 2002 as a Chief Technologist after more than twenty years of service. He participated in many commercial and military spacecraft designs, and was responsible for a multitude of advanced communications satellite systems and spacecraft antenna initiatives. His latest focus at Hughes Electronics as the chief architect was on telecommunications for broad-band fixed IP wireless and the 3G mobile communications systems utilizing stratospheric platforms. Dr. Chang holds over 90 U.S. patents with more than 70 additional patents pending on smart antennas, digital/optical beam formers for imaging and communications. He has won multiple awards for his work related to synthesized aperture techniques and digital beam forming. He earned his Ph.D. & MSEE from Stanford University in 1978.

For more information, please contact IEEE Systems Council Chapter’s Chair, Dr. Henry Yeh at henry.yeh@csulb.edu.