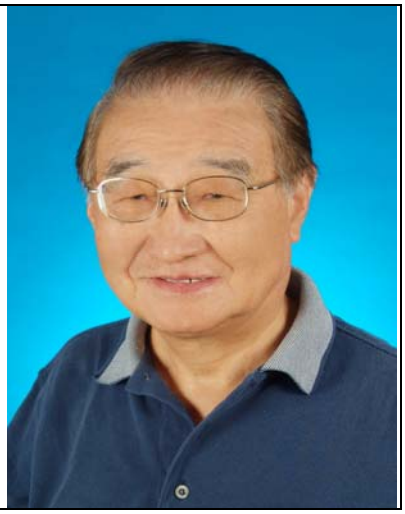
Tsinghua National Laboratory for Information Science and Technology

Intellectual Venture Chair Professor Group Distinguished Lecture Series

时间：2012 年 3 月 16 日星期五上午 10：30-12：00 **地点：Fit 楼 1-312** **内容：Core Technologies for The Future Internet and Cloud Ecosystem** **主讲人：Professor Kai Hwang** **University of Southern CaliforniaLos Angeles, CA. USA**	

Biographical Sketch: Kai Hwang is a Professor of EE/CS at the University of Southern California. He also chairs the IV-endowed visiting chair professor group at Tsinghua University in China. He received the Ph.D. from University of California, Berkeley in 1972. He has published 8 books and over 218 scientific papers in computer architecture, parallel processing, distributed systems, cloud computing, network security, and Internet applications. His popular books have been adopted worldwide and translated into 4 foreign languages. His published papers have been cited more than 9,000 times. Hwang's latest book: *Distributed and Cloud Computing: from Parallel Processing to the Internet of Things* (with G. Fox and J. Dongarra) was just published by Kaufmann in 2011.

Dr. Hwang was awarded an *IEEE Fellow* grade in 1986, received the 2004 *CFC Outstanding Achievement Award,* and the *Founder's Award* for his pioneering work in Parallel Processing from IEEE IPDPS in 2011. He has served as the founding Editor-in-Chief of the *Journal of Parallel and Distributed Computing* for 28 years. He has delivered 34 keynote addresses on advanced computing systems and cutting-edge information technologies in major IEEE/ACM Conferences. Hwang has performed advisory, consulting and collaborative work for IBM, Intel, MIT Lincoln Lab, JPL at Caltech, ETL in Japan, ITRI in Taiwan, GMD in Germany, INRIA in France, and Chinese Academy of Sciences. He can be reached via Email: kaihwang@usc.edu.

Abstract: In this talk, Dr. Hwang will assess the impact of cloud ecosystem on the development of the future Internet. The Internet of machines is being upgraded to the *Internet of things* (IoT). Both public and private clouds will be used to provide compute, storage and networking services in the era of IoT. First, he will compare three future Internet architectural propositions: Stanford OpenFlow, Content

Centric Networking (CCN) developed at HP and UCLA, and the Sofia architecture under development at Chinese Academy of Sciences. Then he will discuss the frontier research tasks needed to build a healthy and green cloud ecosystem to meet the demands in the future Internet.

The cloud ecosystem includes hardware and software infrastructure, service protocols, programming environments, green information technology, datacenter protection, and business models applied to serve the general public and to support all sorts of new IoT applications. In particular, Hwang will review cloud service stack, identify performance bottleneck, assess cloud security, privacy, and trust management, and explore energy-efficient solutions. Several innovative applications on the clouds, green datacenters, and new IoT projects will be introduced. The talk covers critical issues on the ubiquity, mobility, scalability, energy efficiency, and availability of the Internet clouds and explores their plausible solutions in using massive number of clouds in the future.