THE NEED OF ENERGY-EFFICIENT COMPUTATION IN BIOMEDICAL BIG DATA ANALYSIS AND NEURAL COMPUTATION

Prof. Ting Chen, Prof. Xiaolin Hu, Dr. Bo Zhang

Department of Computer Science and Technology

Tsinghua University

2013年12月16日　星期一　03：15pm

英杰交流中心第八会议室

ABSTRACT: Modern high-throughput DNA sequencing techniques are capable of sequencing individual or mixtures of genomes and transcriptomes in natural systems efficiently and at a low cost. The speed and the low cost of these new sequencing technologies have resulted in the generation of massive biological data sets, providing enormous opportunities for environmental, ecological or general health-research oriented metagenomic analysis, through direct-sequencing of micro-organisms in biological samples followed by computational analysis, classification and annotation of the sequencing data. In the first part of this talk, we will discuss the computational challenges in the data analysis as well as the need for energy-efficient computation.

BIOGRAPHY: Bo Zhang is now a professor of Computer Science and Technology Department of Tsinghua University, the fellow of Chinese Academy of Sciences. In 1958 he graduated from Tsinghua University, and became a faculty member since then. From 1980 to 1982 he visited UIUC, USA as a scholar. He is now the technical advisor of Fujian government, and the member of Technical Advisory Board of Microsoft Research Asia. He is engaged in the research on artificial intelligence, artificial neural networks, genetic algorithms, intelligent robotics, pattern recognition and intelligent control. In these fields, he has published over 150 papers and 4 monographs.

BIOGRAPHY: Ting Chen is currently a professor of biological sciences, computer science, and mathematics at USC. Before joining USC in 2000, he had been a lecturer of genetics at Harvard University, working as a research fellow in George M. Church's Laboratory. He obtained his Ph.D. degree in computer science from SUNY Stony Brook in 1997, and B.E. degree in computer science and technology from Tsinghua University in 1993. He received Sloan Research Fellowship in 2004.

BIOGRAPHY: Xiaolin Hu received his B.E. and M.E. degree in vehicle engineering from Wuhan University of Technology in 2001 and 2004, respectively, and Ph.D. degree in Computer Aided Engineering from the Chinese University of Hong Kong in 2007. He jointed Computer Science and Technology Department at Tsinghua University in 2007 as a postdoctoral fellow, and he is currently an assistant professor of Tsinghua University.

主办单位：北京大学国际合作部、北京大学高能效计算与应用中心