



# 北京大学高能效计算与应用中心学术报告

Invited Talk, Center for Energy-Efficient Computing and Applications

## HIGH-PERFORMANCE COMPUTING, DEEP LEARNING, HUMAN AND ARTIFICIAL INTELLIGENCE

**Dr. Ren Wu**

**Distinguished Scientist, Baidu**

2015年4月7日 星期二 10:00am

理科二号楼2736会议室



**ABSTRACT:** Deep Image is a state-of-the-art image recognition system, developed using end-to-end deep learning. The key components are a custom-built supercomputer dedicated to deep learning, a highly optimized parallel algorithm, novel data augmentation approaches, and usage of multi-scale high-resolution images. On one of the most challenging computer vision benchmarks, the ImageNet classification challenge, Deep Image achieved a state-of-the-art result, with a top-5 error rate of 4.83%, which exceeds a human expert's performance.

It is even more interesting to compare human and artificial intelligence. In this talk, I will also show you some of the classic examples of both human and machine intelligence and highlight how some of the seemingly unrelated pieces are, in fact, all connected. This talk will target the general audience who is interested in artificial intelligence, no in-depth knowledge of computer science, deep learning, or high-performance computing is needed.

**BIOGRAPHY:** Dr. Ren Wu is a distinguished scientist at Baidu Research. He is leading the effort to push the frontier of deep learning and artificial intelligence (AI) via high-performance heterogeneous computing. His latest work, Deep Image, powered by custom-designed supercomputer dedicate for deep learning, have achieved state-of-the-art performance on image recognition tasks. His dream is to make AI to be omnipotent and omnipresent.

Prior to joining Baidu, Ren served as chief software architect of Heterogeneous System Architecture (HSA) at AMD. Earlier, he was the principal investigator of CUDA Research Center at HP Labs, where he is widely known for his pioneering work in using GPUs to accelerate big data analytics and large-scale machine learning algorithms.

Ren is also known for his early work on artificial intelligence. His Xiangqi (Chinese chess) program was twice world champion and have dominated computer Xiangqi field for more than a decade. He was the first person to perform systematic research computationally on Xiangqi endgames with astonishing discoveries.