Image Quality Assessment

Prof. Xinbo Gao
Xidian University, China

Abstract

The aim of image quality assessment (IQA) is to find a computational model that can predict visual perception quality automatically. This talk will focus on the image quality assessment based on machine learning. It is to simulate and describe the human visual system to find the optimal description of image feature for depicting the degree of image degradation, and then construct the best quality model for measuring visual quality of distorted image and the ability to provide information of the image. The available image quality assessment based on machine learning can be divided into 3 categories, IQA based on distortion classification, IQA based on feature representation and IQA based on feature mapping. By discovering the potential correlation between the cognitive model of human learning and the computational model of human perception, these IQA models are precisely established to describe the visual perception quality from different aspects. Finally, I will introduce some new research topics and applications of image quality assessment.
Network Design Optimization: 
New Trends and Methods

Prof. Dritan Nace 
University of Technology of Compiègne, France

Abstract

Network optimization is a well identified research area in telecommunications. From network manager point of view Network Optimization is mainly concerned with the process to keep a network operating at high efficiency with a lower cost. From research methodology point of view Network Optimization includes mathematical modeling and optimization methods, with applications in network design, performance analysis, reliability, survivability, network restoration, routing, traffic analysis, wireless networks, etc. These last years there has been much progress in both methodology and operational tools development applied to Network Optimization. We can cite advances in robust optimization and mathematical programming solvers. During this talk we will present some related topics on network design with a special focus on resilient networks, evolving networks and robustness. For each case study, both the related mathematical problems and solving methodologies will be presented.
Adaptable Resource Allocation in Cloud Computing Systems

Prof. Albert Y. Zomaya
University of Sydney, Australia

Abstract

Cloud Computing is among the fastest growing topics in computing research today. Although the idea of offering computational power as a service is not novel, it did not publically become available before Clouds. Clouds are fundamentally different from their predecessors (Grids/Clusters) and thus require specific expertise to be properly utilized. Today, there are literally hundreds of cloud providers in all forms and scales. Computing needs (applications) have also become increasingly diverse. In this talk, I will describe challenges with the dynamicity and heterogeneity of resources and the diversity of applications from resource management perspective. Then, I will discuss how we can turn these challenges into opportunities for cloud systems’ efficiency.
Abstract

Modern clustered storage systems increasingly adopt erasure coding to reduce the storage overhead of traditional 3-way replication. However, there remain challenging issues of maintaining high performance in erasure-coded clustered storage systems. In this talk, I will share our experiences of deploying erasure coding in Hadoop, a popular clustered storage platform for big data analytics. I will present two new designs: (1) CORE, which augments existing optimal regenerating codes for the recovery of a general number of failures including single and concurrent failures, and (2) Degraded-First Scheduling, which improves MapReduce performance in erasure-coded storage. I will present new analytical results, as well as experimental findings based on our prototypes in a Hadoop cluster.