Abstract:

Online mechanisms are useful and efficient for allocating resources in cloud computing. The problem of designing a satisfactory cloud auction mechanism is challenging because the application scenario brings about some cloud specific requirements, such as instant response and dynamic assembling decision. The existing solutions cannot successfully meet these requirements, and therefore, cannot be applied to a physical cloud system.

In this talk I will present our effort towards practical cloud auction mechanisms, including two studies. In the first study, we employ a tailored primal-dual algorithm that decomposes the long-term optimization into a series of independent one-shot optimization problems, and design a randomized VCG auction for the one-shot problem based on dual fitting approximation technique and randomized decomposition technique. In the second study, we decide the users' payment using a judiciously designed global pricing curve, and derive the allocation rule which is necessary for satisfying desired mechanism properties. Both theoretical analysis and simulation results show that our proposed online mechanisms are efficient compared with offline solutions.

About the Speaker:

Mr. Shi Weijie is a full-time PhD student in the Department of Computer Science, The University of Hong Kong. His supervisor is Dr. C. Wu. His research interest is computer networks.