T1. A Crash Course on Mobile Cloud Computing

Abstract:
Together with an explosive growth of the mobile applications and the usefulness of the cloud computing concepts, mobile cloud computing has emerged as a potential enabling technology for future generation mobile services and applications. Mobile cloud computing integrates the cloud computing concepts into the mobile environment and overcomes obstacles related to the performance improvement of mobile computing systems (e.g., battery life, bandwidth, and capacity), networking environment (e.g., heterogeneity, scalability, and availability), and mobile system security (e.g., reliability and privacy).

In this tutorial, an exposition to mobile cloud computing will be provided. Starting with the motivations of mobile cloud computing, the basics of the relevant technologies including mobile and wireless services, grid and utility computing, and cloud computing will be discussed. Then, the details of a mobile computing architecture and its components will be described. In particular, an overview of the concepts such as data center, Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) will be given. Next, a variety of applications which use mobile cloud computing will be discussed. Then, the research issues and challenges in mobile cloud services, and different approaches proposed in the literature to solve these challenges will be discussed. In this context, two optimization models developed for mobility-aware offloading and admission control of mobile cloud users in mobile cloud computing environment will be presented. To this end, we will outline several major research directions in mobile cloud computing which include power management and quality-of-service support for mobile devices, standard interface for data exchange, service pricing and revenue management for service providers, and service convergence for application developers.

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