# Proactive Caching for Hybrid Urban Mobile Networks

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*Afra Mashhadi (UCL)*

*Dr. Pan Hui (Deutsch Telekom)*

## Abstract

Consuming digital multimedia (such as videos) on move has become evermore popular, all thanks to the widespread success of powerful, networked handheld devices as well as availability of 3G services in urban areas. The storage sizes and Wi-Fi networking capabilities of such devices have made them a good platform for opportunistic content sharing; however given the bulky nature of multimedia files, the question arises as to how we can increase the number of successfully serviced requests by caching content locally.
In this work we study the state of classical caching and show that while those strategies are considered to be good enough in their intended domain (such as web proxies); they fail to perform effectively when applied to mobile networks due to lower usage. Therefore, we propose an opportunistic proactive caching strategy which exploits available access points to proactively push contents to nodes through Wi-Fi. We demonstrate the effectiveness of this approach, in terms of successful cache hit rate by means of simulation using large-scale real world traces. In addition, we show that up to 70% of content requests can be successfully satisfied by the proposed opportunistic proactive caching, cutting the delivery up to half its original perceived delay.