Título: **Applying Smart Decisions, Adaptive Monitoring and Mobility Support for Enhancing Offloading Systems.**

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Resumo:

The hardware of mobile devices has evolved, and a few device models can even reach the performance of virtual machine instances. Nevertheless, despite technological advances in the capacity of smartphones and wireless technologies, most devices are still computationally limited compared to a desktop computer or a notebook, and they face many challenges to execute applications that require heavy computation. The mobile cloud computing (MCC) paradigm studies how to extend computational resources and the energy of mobile devices through the use of offloading techniques. In this context, this thesis investigates some of the challenges identified in the mobile cloud computing area. Among these challenges, we can mention: the decision of when and where to perform offloading,the decision of which metrics must be monitored by the offloading system, and also the support for user's mobility in a hybrid environment composed of cloudlets and public cloud instances. Given these challenges, this thesis focuses on the development of a framework that allows mobile applications to dynamically perform offloading of methods in a hybrid environment. The developed framework leverages machine learning and software-defined networking techniques to improve offloading decisions, to perform adaptive monitoring, and to support users' mobility. Several experiments were conducted to evaluate the proposed solution, and results show that our offloading decision approach is a lightweight process and the proposed adaptive monitoring service can be used to reduce the energy consumption of mobile devices. Moreover, the results show that the proposed solution supports the most variate mobility scenarios and performs offloading to different remote servers transparently to the user.

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