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Recent years have seen a rapid adoption of mobile devices, and an increased reliance on them,

which has lead to increasingly computationally complex mobile applications. As a result, there have been several proposed systems that offload computationally intensive workloads from mobile devices to other computing resources, ~~as, vncan~~ not be tolerated, or

network connectivity to such resources. In these situations, offloading to other local devices is the only option. To this end, I have proposed a system that utilizes ad hoc communication protocols to create a local cloud that can be used for computational offloading.

By extending an existing mobile computing platform, I show the viability of offloading computation to devices within one hop, and model the cost in terms of time and energy for this hybrid system. Additionally, I have designed and developed several approaches to enable multi-hop communication within a network of mobile devices utilizing the WiFi Direct communication protocol. By doing so, I have further enhanced mobile computing by enabling the necessary infrastructure to facilitate multi-hop ad hoc computational offloading. With an implemented system, I was able to model the performance of this multi-hop computational offloading system, as well as model the task distribution problem as a linear bottleneck assignment problem and thus provide a provably optimal task