Poster Title: Optimizing Task Allocation for Edge Micro Clusters

Abstract

Edge computing paradigm promises to provide computing services locally near the Internet of Things (IoT) applications, sensors, and devices to mitigate latency and privacy concerns. In this work, we characterize and advocate the need for heterogeneous edge micro-clusters (HEμCs). Edge micro-clusters are pragmatic, low-power, low-cost, minimal footprint units that can provide sufficient resources for typical edge compute applications. However, to make the best use of heterogeneous edge micro-clusters, we require resource management techniques that are both efficient and effective. We report on an empirical study to demonstrate that mathematical optimization (in particular, mixed integer programming) for resource management is appropriate in terms of overhead, also highly effective for executing batch arrival workloads in smart city use cases.