Multi-agent and Reinforcement Learning Based Code Offloading in Mobile Fog

Fog computing, which performs on network edges, is a front-end distributed computing archetype of centralized cloud computing. Mobile Fog is a special purpose computing prototype, which leverages the mobile computing to deliver seamless and latency-aware mobile services. Offloading computation in mobile Fog is challenging because of the spatiotemporal resource requirements of heterogeneous mobile devices. In this paper, we propose reinforcement learning based code offloading mechanism to ensure low-latency service delivery towards mobile service consumers. We use the distributed reinforcement learning algorithm to offload basic blocks in a decentralized fashion to deploy mobile codes on geographically distributed mobile Fogs. We simulate the proposed prototype using OMNeT++ considering fluctuated resources of mobile Fog and varied service demands of mobile users. The proposed method significantly reduces the execution time and latency of accessing mobile services while ensuring lower energy consumption of mobile devices.