The objective is to design a Multi-Agent DRL based Task Offloading and Resource Allocation Approach for Fog Computing Environment to:

- Optimize task offloading decision with minimizing the cost of computation delay and energy consumption to improve the delay critical QoS requirements for real time applications.

We consider a network and computation model described as a multiple tasks with multi-Fog environments and the complex nature of task requirements in both wired and wireless-based services.

The major focus will be:

- IoT-Edge-Fog specifically between distributed FOG while sending task to neighbor Fog and returning result back.

Problem

- The heterogeneous and dynamic nature of the Fog networks:
  - Resource status and task allocated in each Fog node varies through time.
- These are main concerns in:
  - Where to offload,
  - Communication model,
  - Computation model and
  - D/R Learning approaches and extract real-time information from the Fog and Task.
- Generally, our model is allows to do:
  - Generate data from the the environment and store it in the replay buffer.
  - Use the data to train the model from the replay buffer.
  - Inject the agent with Fog environment and enable with history using Deep Learning.
  - Evaluate the result.

Objective

Conclusions

We deployed a MADRL based task offloading algorithm in the Fog to enhance different delay-sensitive application domains in a real-time manner.

Specifically, techniques for optimizing the cost of task computation delay and energy consumption QoS requirements in task offloading for both dynamic and static topological Fog architectures.

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