FPFTS: A joint fuzzy particle swarm optimization mobility-aware approach to fog task scheduling algorithm for Internet of Things devices

In this paper, presented FPFTS, fog task scheduler that takes advantage of Ppaper Swarm Optimization (PSO) and fuzzy theory, which leverages observations related to application loop delay and network utilization. This paper evaluates FPFTS using an IoT-based scenario simulated within iFogSim, by varying number of moving users, fog-device link bandwidth, and latency.
The goal of the proposed approach is to optimally use fog resources such to reduce network utilization and application loop delay.

Note: This paper compares FFPTS with FCFS and delay priority.

In this paper, structure consists of three layers. The front-end layer (device layer) consists of user devices (such as smartphones, laptops, tablets, etc.), Fog layer consists fog nodes (such as servers) and cloud layer with Datacenters.

FPFTS first uses fog devices for task scheduling. Only in case of fog-device overloading, FPFTS offloads tasks to the cloud data center by using offloading agents (located in fog devices) to overcome the fog-devices computing limitations.
jobs generated by applications/services are decomposed into a set of atomic tasks to be assigned to fog devices. If the tasks composing a job are mutually independent, they can be executed on separate fog devices, with no need of explicit synchronization.
The goal is to find the most adequate fog devices to run each application task so as to have a proper outcome in terms of application loop delay and also network utilization. FPFTS considers the features of resources and tasks simultaneously. When it comes to the FPFTS, unlike the delay-priority strategy, FPFTS considers all of the fog devices in the same fog region for applications' task scheduling. Like delay-priority strategy, FPFTS considers application priority for both task scheduling and cloud data center data offloading steps.

My Questions:

1. The tasks in cloudsim were specified with cloudlet, is it the same in ifogsim? *No, we derived it to Tuple*

2. I think the simulation is offline and the tasks are already known because we have a dataset and we divide the tasks between the fog nodes with the help of an algorithm in order to get the best arrangement of the tasks so that we have less delay. The new work that is not entered and the number of fog devices are determined according to the number of users. So how will we have overloading? When will they move to the cloud? Am I right? *No, simulation is not offline. Types of tasks are known, but the number of tasks is determined by simulation total time, fog device capability, and senser distribution type and value.*

3. How are regions defined for fog devices?

   he is simulated with only one region, we could work out, ifogsim2 version supports it.

4. Considering how many regions we have in the smart city, then we have a broker in each of the regions and our algorithm is defined in it? yes ,each region should have its own broker

5. How are priorities defined? priority defined by app, he is running two apps together, EEG game is latency sensitive it has high priority tasks, while other has low

6. Is it possible to move the tasks between the fog devices so that they are closer to the user? This is not done in this paper. broker assigns tasks to device, once assigned it is over it cant be changed

7. I also want to compare my work with this paper, should I implement the algorithm of this paper? Can I compare them without implementing the algorithm of this paper? as you wish

8. How is the dataset of this paper? It uses two separate programs. I didn't find a dataset. How can I access it? he did not use in simulation just explained.

9. According to Figure 5, delay-sensitive tasks go directly to the fog nodes to be executed, but the delay priority goes to the fog gateway to be scheduled and transferred. Did I understand correctly? you understood wrongly

10. Are FCFS and delay priority running on the fog nodes at the same time? Somewhere in the text of the paper, it says that these two algorithms are located in the fog nodes and FFPTS is located in the fog gateway. all three at gateway, but it is posible to extend to fog devises

11. Considering that my work is a comparison, then the specifications of my fog devices should be according to this paper? yes