Multi-User Reinforcement Learning Based Task Migration in Mobile Edge Computing

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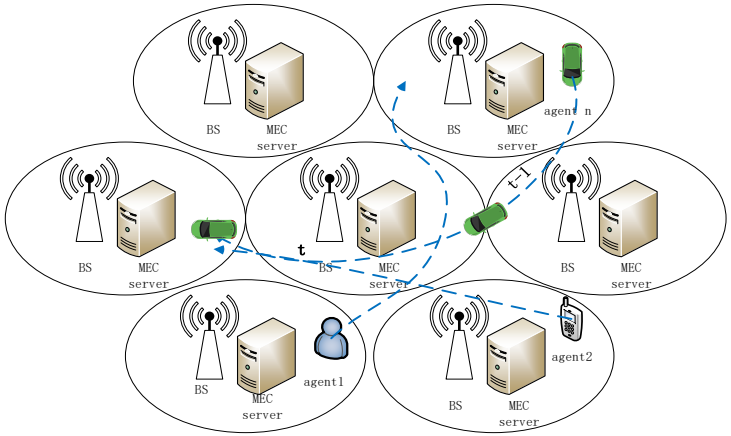
Problems & Ideas

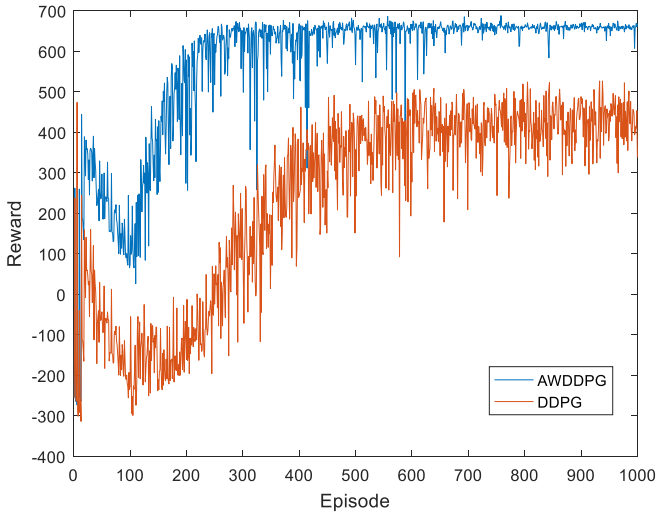
- Problems of task migration in MEC:
  - The centralized processing method cannot meet the task migration requirements in a multi-user environment .
  - In a multi-user scenario, the states of all users are combined into a global state, which leads to the instability of the multi-user scenarios and ignores the influence of multiple users.
- Ideas: An adaptive weight deep deterministic policy gradient (AWDDPG) is proposed, and we use a centralized offline training and distributed execution method to solve the problem of multi-user task migration.

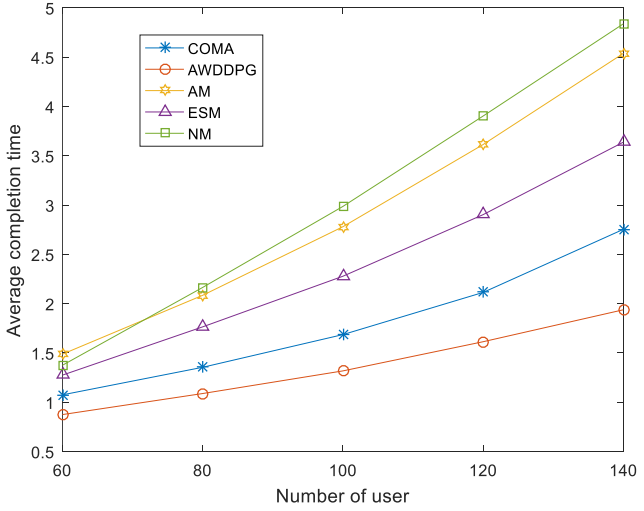


system model

Main Contributions

- Contributions:
  - Under the constraint of migration cost, the multi-user task migration problem is described as a minimization optimization problem to minimize the system delay;
  - The multi-user task migration problem is regarded as a decentralized partially observable Markov decision process , and an AWDDPG algorithm is proposed;
  - The real data sets and simulation data are used to verify the performance of the algorithm.





Left: the rewards of AWDDPG and DDPG algorithms; Right: the average completion time of different numbers of users.