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# Computational offloading in vehicular edge computing using multiple agent-based deterministic policy gradient algorithm and generative adversarial networks

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## Abstract

The development of the intelligent connected vehicles and internet of vehicles as an evolving technology has changed the vehicular edge computing. Computational offloading is the primary challenge. Although numerous offloading algorithms are proposed to achieve computing performance, the mobility, priority of offloading and offloading failure are rarely considered for optimisation and it remains challenging. To address the challenge, this paper presents computational offloading using multiple agent-based deterministic policy gradient-generative adversarial networks (DPG-GAN) and increases the number of offloading executions with a minimum number of edge servers. The system overhead is minimised by 50% while the learning rate is 6e-6. The GAN in the actor-critic network increases the learning rate and efficiency. The energy utilisation is 15 to 25 J which is two times better than LSTM. Simulation and its results show the system gives minimal system overhead from 210 episodes and subject to processing time delay and energy utilisation.