

Crow Search Algorithm-Based Task Offloading Strategies for Fog Computing Architectures

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Abstract : The rapid digitization of various aspects of life is leading to the creation of smart IoT ecosystems, where interconnected devices generate significant amounts of valuable data. However, these IoT devices face constraints such as limited computational resources and bandwidth. Cloud computing emerges as a solution by offering ample resources for offloading tasks efficiently despite introducing latency issues, especially for time-sensitive applications like fog computing. Fog computing (FC) addresses latency concerns by bringing computation and storage closer to the network edge, minimizing data travel distance, and enhancing efficiency. Offloading tasks to fog nodes or the cloud can conserve energy and extend IoT device lifespan. The offloading process is intricate, with tasks categorized as full or partial, and its optimization presents an NP-hard problem. Traditional greedy search methods struggle to address the complexity of task offloading efficiently. To overcome this, the efficient crow search algorithm (ECSA) has been proposed as a meta-heuristic optimization algorithm. ECSA aims to effectively optimize computation offloading, providing solutions to this challenging problem.

Keywords : IoT, fog computing, task offloading, efficient crow search algorithm

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