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Swarm Intelligence as a Potential Solution for Internet of Things

Advancement in technology is improving rapidly in recent years, the Internet of Things (IoT) aims to connect multiple devices for information sharing and intelligent decision making. The rapid increase in connected devices comes along with new challenges. Addressing these challenges using traditional algorithms may not be effective. Swarm intelligence algorithms are self-organized algorithms used to resolve complex and dynamic problems with incomplete information and limited computational capabilities. The aim of this exclusive survey is to provide a summarized brief study of all the existing research on application of swarm intelligence for IoT.

The results show that the Field of application of swarm intelligence in IoT is very huge and there is still room for further study. The study shows the benefits of applications of swarm intelligence on IoT in many real time situations. After the mapping study the different types of swarm intelligence algorithms used and their percentages (like Particle Swarm Optimization-25.220%, Ant Colony Optimization-13.040%, Hybrid Intelligence-13.910%, Grey Wolf Optimization-6.090%, Artificial Bee Colony-5.220%, Cuckoo Search-3.480% etc. The detailed study conducted is summarized into year published, problem solved, scope of the paper, benefits of the study, gap area, implementation tool used and the performance analysis.

The gap area in the papers shows that there is requirement of the further study is this field. Swarm algorithms in IoT have immense capability of further development and are prominent in building smart cities and artificial intelligence based connected society.

Biography:

Dr. Shreyas J received the B. E degree in M. Tech degree from Visvesvaraya Technological University. He has received full time Ph.D. degree from Bangalore University in 2021. All the three degrees are in Computer Science and Engineering discipline. He has completed Ph.D. in the area of Internet of Things and Artificial Intelligence in the Department of Computer Science and Engineering, University Visvesvaraya College of Engineering (UVCE, IIT Model College), Bangalore University, Bangalore. He is currently working as Assistant Professor, Dept. of Information Technology, Manipal Institute of Technology Bengaluru, Manipal Academy of Higher Education, Manipal, India. He is involved in research, and teaching B. E and M.Tech student of Computer Science and Engineering and he has more than 8 years of research, academia and industrial experience. He has published more than 50 papers in International Journals including Elsevier, Springer, Inderscience and International Conferences which are indexed by SCI and Scopus. He has received two best paper awards in Hong Kong and Dubai each during International Conferences. He has worked as a reviewer for various reputed journals including Nature, IEEE, Elsevier, Springer, Johnny Wiley, etc publishers and international conferences. He also served as Guest Editor, Editorial Member, Session Chair, Technical committee member etc. for various journals and conferences. He has filed, published and registered various patents. His current research lies in the area of Sensor Networks, Artificial Intelligence of Things, Swarm Intelligence and Machine Learning.