## IEEE World AI IoT Congress (AlloT), Seattle, WA, USA, 7-10 June 2023

## Running virtual services for the intelligent edge: A review

Abu-Mahfouz, Adnan MI Council for Scientific and Industrial Research (CSIR) Meiring Naude Drive, Pretoria, 0184 Email: <u>AAbuMahfouz@csir.co.za</u>

In the world of technology, there are several emerging technologies that are driving research towards making the Intelligent Edge suitable for various application growth. Some of these technologies include Artificial Intelligence, the Internet of Things, Virtualization, and Edge Computing. Virtualization is a popular choice as it provides adaptable development of services. Meanwhile, Artificial Intelligence offers promising data manipulation opportunities, and Edge Computing provides lower latency and higher data privacy to users. This paper focuses on the architecture for virtual service deployment in the Intelligent Edge, with a particular emphasis on significant concepts such as Virtualization, Network Function Virtualization, Artificial Intelligence, and the Intelligent Edge. The paper also discusses various modifications for virtual services, such as the Round Robin Algorithm, Minimum-Minimum algorithm, Multiheuristic Algorithm, and Particle Swarm Optimization Algorithm. These algorithms are compared based on performance indicators such as makespan, standard deviation, degree of imbalance, and processing speed. While the results vary from one algorithm to another, they suggest that there is always room for improvement. Furthermore, the paper presents future opportunities for virtual service deployment in Intelligent Edge Computing.