(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :11/09/2023

(21) Application No.202311060845 A
(43) Publication Date : 13/10/2023

(54) Title of the invention : POWER EDGE GATEWAY DEVICE AND DEVICE-BASED SENSOR DATA UPLINK STORAGE METHOD

(51) International classification :H04L0067120000, G06F0021620000, G06F0016270000, H04W0004380000, G06F0009500000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The present invention relates to the field of data communication and Internet of Things (IoT) technologies. Specifically, it pertains to a power edge gateway device (100) and a device-based sensor data uplink storage method (200). The invention enables efficient collection, processing, and transmission of sensor data from edge devices, facilitating seamless integration of sensor-based applications in diverse industries, including but not limited to, smart cities, industrial automation, agriculture, and environmental monitoring. The device-based sensor data uplink storage method (200) involves the initiation of the data uplink process by the power edge gateway device when a predefined condition is met. The condition could be based on factors such as data size, time interval, or event triggers. Once the condition is met, the power edge gateway device compresses and encrypts the sensor data for transmission.

No. of Pages : 24 No. of Claims : 10