Electricity big data analysis of base station electricity consumption

What is a base station power consumption model?

In recent years, many models for base station power con-sumption have been proposed in the literature. The work in proposed a widely used power consumption model, which explicitly shows the linear relationship between the power transmitted by the BS and its consumed power.

What are the applications of data analytics in the electricity sector?

Then,we qualitatively review over 200 high-impact studies to present an in-depth analysis of the most prominent applications of Data Analytics in each of the electricity sector's areas: generation,trading,transmission,distribution,and consumption. For each area,we review the state-of-the-art Data Analytics applications and methods.

What is the relationship between energy consumption and BSID?

Energy consumption exhibits a roughly linear relationshipwith the load of the primary cell. Without distinguishing BSID,as depicted by the gray area in the figure,a common load value corresponds to high variance in energy consumption.

What is the energy consumption dataset?

Energy Consumption: The dataset includes hourly mea-surements of energy consumption. The dataset is split into training and testing sets to test our model's generalization capabilities,with certain BSs only present in the testing set. The training set consists of 92,629 samples.

Big data and random matrix technologies can support real-time data processing and analysis, enabling electricity consumption prediction models to be updated and adjusted promptly ...

Importantly, this study item indicates that new 5G power consumption models are needed to accurately develop and optimize new energy saving solutions, while also considering the ...

To address this, we propose a novel deep learning model for 5G base station energy consumption estimation based on a real-world dataset. Unlike existing methods, our approach ...

A study by Huawei Technologies (Figure 1) indicates that while 5G demonstrates lower energy consumption per unit of data, the overall power consumption is higher compared to previous ...

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Mobile Network Operators develop new technologies, as the 5G network, to handle the constantly increasing network traffic, while they put less effort on optimizing their operations. ...

The anticipated power consumption sequence data for a period of time is the output data while the input data

is the sequence for a certain period of predicted electricity consumption.

The current base station management faces challenges such as imprecise information perception, a lack of precise prediction techniques for load and energy consumption, and the ...

The BigOptiBase platform has been designed and will offer a big data analytics subsystem developed to provide elastic energy efficient solutions for the base stations using data analytics and ...

This project involves working with the "5G-Energy Consumption" dataset provided by the International Telecommunication Union (ITU) in 2023 as part of a global challenge for data scientists. The ...

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