
5g base station power estimation method

Do base station energy saving features affect 5G energy consumption?

Abstract: The implementation of various base station (BS) energy saving (ES) features and the widely varying network traffic demand makes it imperative to quantitatively evaluate the energy consumption (EC) of 5G BSs. An accurate evaluation is essential to understand how to adapt a BS's resources to reduce its EC.

Does a balanced dataset improve energy prediction of 5G base stations?

For energy prediction of 5G base stations, this thesis finds that using a more balanced dataset, in terms of the number of samples for each product, has a positive impact for the ANN and the Gradient Boosted Trees model while the linear regression performs worse.

Can machine learning predict energy consumption for 5G/4G radio base stations?

To further develop energy modelling methodology and attempt to answer the questions presented in the previous section, different machine learning algorithm's ability to predict energy consumption is investigated for 5G/4G radio base stations.

How can we improve the energy efficiency of 5G networks?

To improve the energy efficiency of 5G networks, it is imperative to develop sophisticated models that accurately reflect the influence of base station (BS) attributes and operational conditions on energy usage.

The implementation of various base station (BS) energy saving (ES) features and the widely varying network traffic demand makes it imperative to quantitatively evaluate the ...

Based on this utility function, an aggregated control method is proposed, including real-time available power estimation and model predictive control (MPC) for the gNBs-cluster, ...

Accurate power consumption forecasting plays a pivotal role in energy management, influencing both utility operations and customer experience. With increasing ...

To address these issues, this article proposes a mathematical model for optimizing 5G base station coverage and introduces an innovative adaptive mutation genetic algorithm ...

A novel method based on machine learning is proposed to estimate the electromagnetic radiation level at the ground plane near ...

The large-scale deployment of 5G base stations has provided improved communication quality but has also led to significant increases in power costs for communication operators.

However, there is still a need to understand the power consumption behavior of state-of-the-art base station architectures, such as multi-carrier active antenna units (AAUs), ...

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 ...

Abstract Recently, with the commercialization of 5G, a new electromagnetic field (EMF) evaluation method is needed. However, conventional EMF evaluation methods are only ...

Mathematical optimization of energy consumption requires a model of the problem at hand. In this thesis

linear regression is compared with the gradient boosted trees method and a neural ...

5g base station is composed of BBU and AAU. One base station is configured with one operator's three cells (1 BBU + 3 AAU). Assuming that the power consumption of 5g BBU ...

This paper conducts a literature survey of relevant power consumption models for 5G cellular network base stations and provides a comparison of the models. It highlights ...

In this study, the idle space of the base station's energy storage is used to stabilize the photovoltaic output, and a photovoltaic storage system microgrid of a 5G base station is ...

To ensure the safe and stable operation of 5G base stations, it is essential to accurately predict their power load. However, current short-term prediction methods are rarely ...

This project aims to predict energy consumption in 5G base stations using Supervised Learning Regression techniques. The goal is to model and estimate the energy consumed by different ...

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