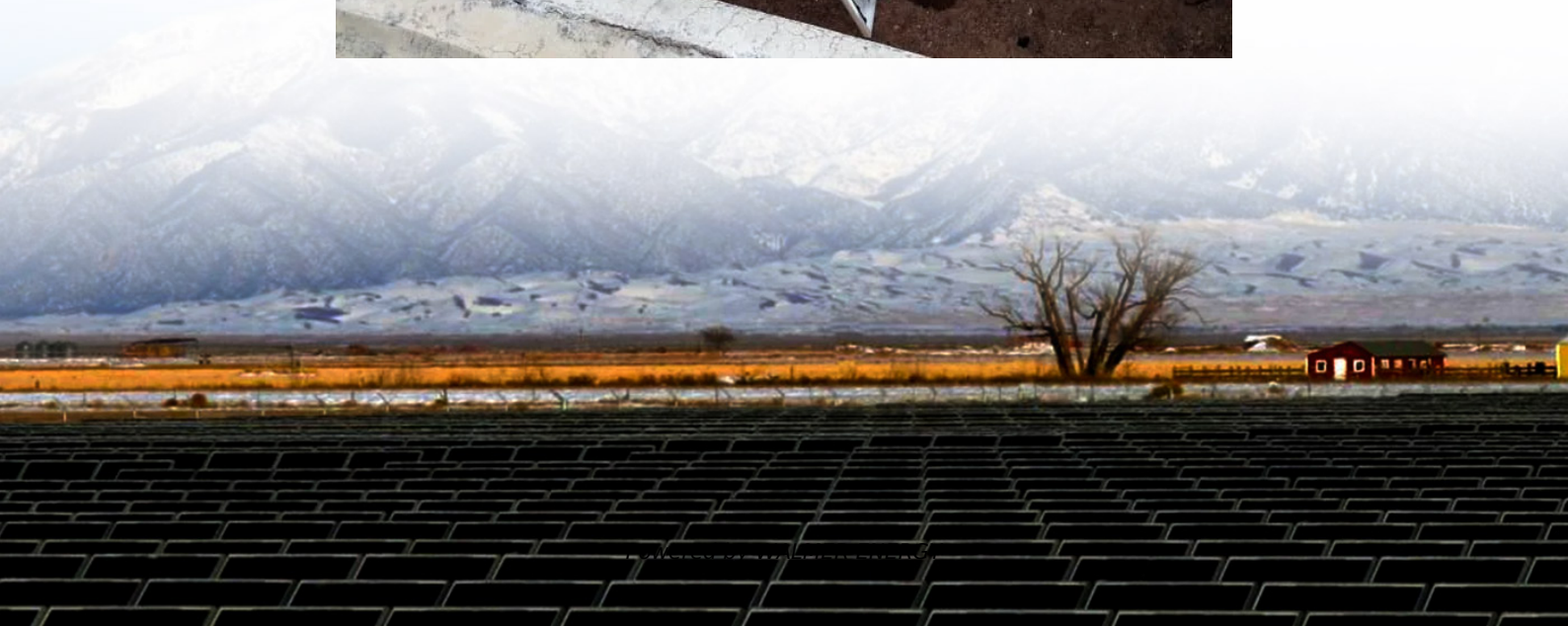


# 5g base station power consumption error





## Overview

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Is 5G base station power consumption accurate?

esan@huawei.com Abstract—The energy consumption of the fifth generation (5G) of mobile networks is one of the major concerns of the telecom industry. However, there is not currently an accurate and tractable approach to evaluate 5G base stations (BSs) power consumption. In this article, we pr.

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.

Is energy consumption a concern for 5G networks?

Abstract—The fifth generation of the Radio Access Network (RAN) has brought new services, technologies, and paradigms with the corresponding societal benefits. However, the energy consumption of 5G networks is today a concern.

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.



## 5g base station power consumption error

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Hierarchical regulation strategy based on dynamic clustering ...

Jan 1, 2025 · Utilizing the backup energy storage potential of 5G base stations (BSs) for economic regulation is an essential strategy to provide flexibility to the power grid and reduce operational ...

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5G Energy Consumption Prediction

This repository contains my project for the 5G Energy Consumption modeling challenge organized by the International Telecommunication Union (ITU) in 2023. The challenge aims to estimate ...

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Coordinated scheduling of 5G base station energy ...

Sep 25, 2024 · However, these storage resources often remain idle, leading to inefficiency. To enhance the utilization of fixed base station energy storage (BSES), this paper proposes a co ...

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Power consumption based on 5G communication

Oct 17, 2021 · At present, 5G mobile traffic base stations in energy consumption accounted for 60% ~ 80%, compared with 4G energy consumption increased three times. In the future, high ...

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Machine Learning and Analytical Power Consumption Models for 5G Base

Mar 13, 2024 · Abstract The energy consumption of the fifth generation (5G) of mobile networks is one of the major concerns of the telecom industry. However, there is not currently an accurate ...

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Two-Stage Robust Optimization of 5G Base Stations ...

Feb 13, 2025 · However, the uncertainty of distributed renewable energy and communication loads poses challenges to the safe operation of 5G base stations and the power grid. ...

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Comparison of Power Consumption Models for 5G Cellular Network Base

Jul 1, 2024 · 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 ...

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5G Base Station Power Consumption Using Machine Learning

Apr 25, 2025 · Accurate power consumption forecasting plays a pivotal role in energy management, influencing both utility operations and customer experience. With increasing ...

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An Analytical Energy Performance Evaluation Methodology for 5G Base

Oct 13, 2021 · 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 ...

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Why does 5g base station consume so much ...



Apr 3, 2025 · The power consumption of the 5G base station mainly comes from the AU module processing and conversion and high power ...

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Why does 5g base station consume so much power and how ...

Apr 3, 2025 · The power consumption of the 5G base station mainly comes from the AU module processing and conversion and high power-consuming high radio frequency signals, the ...

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Modelling the 5G Energy Consumption using Real-world Data: Energy

Jun 13, 2024 · Accurate energy consumption modeling is essential for developing energy-efficient strategies, enabling operators to optimize resource utilization while maintaining network ...

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Machine Learning and Analytical Power Consumption ...

Jan 23, 2023 · Abstract--The energy consumption of the fifth generation (5G) of mobile networks is one of the major concerns of the telecom industry. However, there is not currently an ...

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Energy consumption optimization of 5G base stations ...

Aug 1, 2023 · The explosive growth of mobile data traffic has resulted in a significant increase in the energy consumption of 5G base stations (BSs). However, the e...

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Energy Consumption Modelling for 5G Radio Base ...

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 ...

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Optimal energy-saving operation strategy of 5G base station ...

Dec 1, 2025 · To further explore the energy-saving potential of 5 G base stations, this paper proposes an energy-saving operation model for 5 G base stations that incorporates ...

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Modelling the 5G Energy Consumption Using Real-world ...

Sep 15, 2025 · Accurate energy consumption modeling is essential for developing energy-efficient strategies, enabling operators to optimize resource utilization while maintaining network ...

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5G network deployment and the associated energy consumption ...

Jul 1, 2022 · In particular, this research took the UK as an example to investigate the spatiotemporal dynamic characteristics of 5G evolution, and further analysed the energy ...

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Power Consumption Modeling of 5G Multi-Carrier Base ...

Jan 23, 2023 · 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), ...

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