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Title: 5g base station power consumption identification solution

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What is the energy consumption of a 5G network?

The energy consumption of 5G networks is one of the pressing concerns in green communications. Recent research is focused towards energy saving techniques of base stations (BSs). BSs are one of the most power consuming elements of a 5G network. It is important to model their energy consumption for analyzing overall energy efficiency of a network.

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.

Should power consumption models be used in 5G networks?

This restricts the potential use of the power models, as their validity and accuracy remain unclear. Future work includes the further development of the power consumption models to form a unified evaluation framework that enables the quantification and optimization of energy consumption and energy efficiency of 5G networks.

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.

Abstract: The energy consumption of 5G networks is one of the pressing concerns in green communications. Recent research is focused towards energy saving techniques of ...

Smart Energy Saving of 5G Base Station: Based on AI and other emerging technologies to forecast and optimize the management of 5G wireless network energy consumption

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 ...

Smart energy saving of 5G base stations: Based on AI and other emerging technologies to forecast and optimize the management of 5G wireless network energy consumption

Predicting 5G base station energy consumption using supervised machine learning has real-world applications in addressing critical challenges in the telecommunications industry.

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 integrates ...

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 ...

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 ...

Power consumption models for base stations are briefly discussed as part of the development of a model for life cycle assessment. An overview of relevant base station power ...

This project explores the application of machine learning and deep learning techniques to develop a predictive framework for forecasting power consumption, aiming to support energy providers ...

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