Andorra 5G base station power consumption

Overview

To understand this, we need to look closer at the base station power consumption characteristics (Figure 3). The model shows that there is significant energy consumption in the base stat.

How much power does a 5G base station consume?

That's almost a threefold increase compared to 4G (5). One 5G base station is estimated to consume about as much power as 73 households (6), and 3x as much as the previous generation of base stations (5), (7).

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.

Is artificial neural networks a good power consumption model for 5G AAUs?

In this paper, we present a power consumption model for 5G AAUs based on artificial neural networks. We demonstrate that this model achieves good estimation performance, and it is able to capture the benefits of energy saving when dealing with the complexity of multi-carrier base stations architectures.

What is 5G NR?

The 5G NR standard has been designed based on the knowledge of the typical traffic activity in radio networks as well as the need to support sleep states in radio network equipment. By putting the base station into a sleep state when

there is no traffic to serve i.e. switching off hardware components, it will consume less energy.

How can a 5G network improve performance?

As more radios and base stations are installed for 5G, the models can be improved by re-running the data collection and training the same models on this new data. This is believed to improve performance since it enables more data, both in terms of bulk and in terms of newly deployed features and measurements such as MicroSleepTime for NR, etc.

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