Stockholm 5G base station power consumption measurement and detection

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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 impactfor the ANN and the Gradient Boosted Trees model while the linear regression performs worse.

How can we improve the energy eficiency of 5G networks?
To improve the energy eficiency of 5G networks,it is imperative to develop sophisticated modelsthat accurately reflect the influence of base station (BS) attributes and operational conditions on energy usage.

Why do we need a 5G base station?
The limited penetration capability of millimeter waves necessitates the deployment of significantly more 5G base stations (the next generation Node B,gNB) than their 4G counterparts to ensure network coverage. Notably,the power consumption of a gNB is very high,up to 3-4 times of the power consumption of a 4G base stations (BSs).

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A new power model structure is proposed in order to assess the power consumption of traditional base stations, their extensions, and alternative architectures such as large-scale...

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

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 ...

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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

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In this thesis linear regression is compared with the gradient boosted trees method and a neural network to see how well they are able to predict energy consumption from field data of 5G ...

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Simulations, utilizing actual device data, demonstrate the effectiveness of the proposed method in improving power system frequency performance while guaranteeing the ...

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