An Online Updated Linear Power Flow Model Based on Regression Learning

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Abstract

An online updated data-driven linear power flow (LPF) model based on regression learning is proposed in this paper. We obtain a quadratic power flow model through regression learning first, and then derive the normal and incremental forms of LPF models by Taylor expansion. The parameters of LPF model are updated online, which improves the generalization ability. After only one initial regression learning, the proposed data-driven LPF model avoids model retraining when updated. The new parameter of the proposed model is simply calculated according to the real-time measurement data. Therefore, the LPF model we proposed is accurate, generalizable, and greatly minimizes the data consumption and running time. Performance analysis verifies the superiority of the proposed method.

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