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"Processamento de Erros Grosseiros na Estimação de Estado de Sistemas de Potência em Condições Críticas de Redundância"

State estimation is a function implemented in power system control centers, responsible for building in real-time a complete and reliable database.

Basically, state estimation performs two tasks: filtering errors inherent to metering system and data validation. As part of the estimation process, network connectivity and observability are also determined. The performance of any data validation scheme depends on the redundancy level of the information being processed. Critical redundancy conditions are characterized by the presence of critical measurements and sets.

For the vast majority of data validation algorithms it is impossible to process gross errors in critical measurements and sets. The present work tackles the problem of detection, identification and substitution of measurements with gross errors under critical redundancy conditions, through Forecasting-Aided State Estimators. Besides, strategies for preserving data redundancy and generating high quality pseudomeasurements are also presented. Numerical results from simulation studies performed with the IEEE-14 and IEEE-24 bus test systems are presented and discussed.