Misalignment fault detection and diagnosis using AR model of torque signal

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Description
Misalignment is one of the most common mechanical faults in electrical rotating machinery, it can lead to partial or total breakdown of a motor in the long run may. This paper investigates the application of the Autoregressive Model of torque signal to detect and diagnose the misalignment fault. First, the torque signal obtained from experiment in different conditions: healthy condition, angular misalignment, and parallel misalignment fault are normalized to center the signal at zero mean and scales it to unit standard deviation. Then the AR model coefficients are extracted as features. Min Redundancy max Relevance (mRMR) feature selection technique is used to select the optimal features and reduce the dimension data. Finally, the Self Organizing Map neural network is used for classification of the different conditions. The experimental results show the effectiveness of the proposed method, were both angular and …