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Biography

Dr. Qing Li received the Ph.D. degree from the College of Mechanical Engineering, Donghua University, Shanghai, China, in 2019. He was a Visiting Researcher with the Georgia Institute of Technology, Atlanta, GA, USA, from December 2016 to July 2018. He was a Post-Doctoral Research Fellow with the Department of Mechanical Engineering, University of Alberta, Edmonton, AB, Canada, from June 2019 to June 2020. He is currently an Associate Professor with the Department of Mechanical Engineering, Anhui Agricultural University, Hefei, China. His technical research interests include diagnosis, prognostics, and signal processing. He has authored 51 research articles and 24 patents in these areas. He is editorial board member of measurement science review (SCI) and lead guest editor for 3 SCI journals.

Speech Title:

New progress of sparse low-rank matrix framework for fault diagnosis in mechanical systems

Speech Abstract

Fault impulses induced by localized failure are critical for fault diagnosis and degradation prognostics of rotating machinery, however, the early capturing technique of localized failure is one of the bottleneck issues to be tackled due to weak transient impulses are usually submerged in heavy noise and unrelated components. To this regard, in this talk, two novel sparse low-rank matrix (SLRM) approaches will be designed and introduced for fault diagnosis of mechanical systems, one is the smoothing sparse low-rank matrix (SSLRM) associated with asymmetric and singular value decomposition (SVD) penalty regularizers, and another is the fractional spatio-temporal sparse low rank matrix (FST-SLRM), in which the cost function of both models as well as their solving algorithm will be presented and discussed in detail. Eventually, the experimental results and compared discussion of the proposed SLRM models with state-of-the-art will be given.