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Automated Diagnostics for Manufacturing Machinery Based on Well-Regularized Deep Neural Networks

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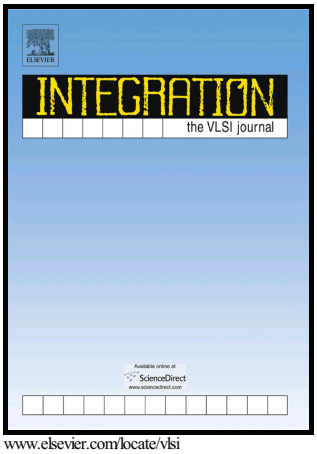

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Automated Diagnostics for Manufacturing Machinery Based on Well-Regularized Deep Neural Networks

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Abstract: This paper presents a bigdata framework based on regularized deep neural networks for automated diagnostics for manufacturing machinery based on emitted sound, vibration, and magnetic field data. More precisely, we present SpotCheck, a prototype system that uses well-regularized deep neural networks to analyze sound, vibrational, and magnetic emissions of industrial machinery to provide noninvasive machine diagnostics, both for fault detection and to meter the day to day mode of operation of the machinery. It is completely automatic requiring no manual extraction of handcrafted features. It can operate with relatively small amounts of training data, but can take advantage of large volumes of unlabeled data when available, and scale to very large volumes of labeled or unlabeled data to improve performance as more data becomes available after deployment.

Keywords: Modeling and analytics for big data; Smart intelligent technologies to enable automated systems for M2M (machine to machine) communication

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