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## Real time end-to-end glass break detection system using LSTM deep recurrent neural network

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### Abstract

The aim of this paper is to propose a new design for a glass break detection system using LSTM deep recurrent neural networks at an end-to-end approach to reduce false positive alarm of state of the art glass break detectors. We utilized raw wave audio data to detect a glass break detection event in End-to-End learning approach. The key benefit of End-to-End learning is avoiding the need for hand-crafted audio features. To address the issue of a vanishing gradient and exploding gradient problem in conventional recurrent neural networks, this paper proposed deep long short term memory (LSTM) recurrent neural network to handle the sequence of the input audio data. As a real-time detection result, the proposed glass break detection approach has a clear advantage over the conventional glass break detection system, as it yields significantly higher precision accuracy (99.999988 %) and suffers less from environmental noise that might cause a false alarm. (C) 2019 The Authors. Published by IASE.

### Keywords

Author Keywords: Glass break detection system; Deep learning; Long-short term memory; Deep recurrent neural network

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