Accepted Manuscript

Fracture mechanics and mechanical fault detection by different methods of artificial intelligence: A review

Sara Nasiri, Mohammad Reza Khosravani, Kerstin Weinberg

PII: S1350-6307(17)30192-9
DOI: doi:10.1016/j.engfailanal.2017.07.011
Reference: EFA 3229

To appear in:

Received date: 25 January 2017
Revised date: 4 July 2017
Accepted date: 4 July 2017

Please cite this article as: Nasiri Sara, Khosravani Mohammad Reza, Weinberg Kerstin, Fracture mechanics and mechanical fault detection by different methods of artificial intelligence: A review, (2017), doi:10.1016/j.engfailanal.2017.07.011

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Fracture mechanics and mechanical fault detection by different methods of artificial intelligence: A review

Sara Nasiri[a], Mohammad Reza Khosravani[b,*], Kerstin Weinberg[b]

[a] *Institute of Knowledge Based Systems and Knowledge Management, University of Siegen, Hoelderlin Str. 3, 57076 Siegen, Germany*
[b] *Chair of Solid Mechanics, University of Siegen, Paul-Bonatz-Str. 9-11, 57068 Siegen, Germany*

Abstract

Artificial intelligence researchers created new branches, developed and applied them to solve the problems and improve the performance since two decades ago. Although lots of AI techniques and approaches are available and developed in mechanical engineering domains, there isn't any survey with aiming to review the existing works, systems and applications in the field of fracture mechanics. In this paper for filling this gap, the states of the art and analysis of five artificial intelligence methods which are used in the field of fracture mechanics are surveyed. This review is performed on technical point on particular applications of artificial neural network, Bayesian network, genetic algorithm, fuzzy logic and case-based reasoning. Therefore, after an overview of AI methods, engineering fracture mechanics and its main domains for fault and failure analysis is described. The existing works from 1990 to 2016 are analysed and discussed in four categories as sub-domains of fracture mechanics: (a) failure mode and failure mechanism identification, (b) damage and failure detection and diagnosis, (c) fault and error detection, diagnosis and (d) mechanical fracture and fracture parameters. We analysed literature based on a classification of these five AI methods in order to highlight their main concepts and mechanisms and explain how they are applied in these sub-domains of fracture mechanics. Our analysis and discussion in this paper shows the advantages, limitations and research gaps in this field. Finally, perspectives and future research directions are outlined.

*Corresponding author
Email address: mohammadreza.khosravani@uni-siegen.de (M. R. Khosravani)

Download English Version:

https://daneshyari.com/en/article/5013471

Download Persian Version:

https://daneshyari.com/article/5013471

Daneshyari.com