Patent Search

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Abstract:

Machine Learning-Assisted Self-Healing Polymer Composites with Embedded Microcapsules for Intelligent Crack Detection and Repair is the proposed invention. The invention focuses on understanding the functions of Intelligent Crack Detection and Repair. The invention focuses on analyzing the parameters of analyze the Self-He Polymer Composites with Embedded Microcapsules using algorithms of Machine Learning Approach.

Complete Specification

Description:[0001] Background description includes information that may be useful in understanding the present invention. It is not an admission that any of th information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.
[0002] Machine learning (ML) is a type of artificial intelligence (AI) that allows computers to learn from data and improve their performance over time. Machine lea (ML) uses algorithms to analyze data, identify patterns, and make predictions. Machine learning (ML) systems are fed large amounts of data. Machine learning (ML) companies make informed decisions. Machine learning algorithms can be used depending on the data and desired level of complexity, such as linear regression, de trees, random forests, support vector machines, or neural networks.
[0003] A number of different types of self-healing polymer composite systems that are known in the prior art. For example, the following patents are provided for supportive teachings and are all incorporated by reference.
[0004] US20090036568A1: A self-healing material comprises a matrix embedded with micro-pockets of a healing-agent releasable by a crack in the matrix. The he agent is able to bond to the matrix to repair the crack. The healing-agent is contained in microcapsules. A corresponding catalyst for the healing-agent is embedded matrix and contained in a plurality of microcapsules as an emulsion. The emulsion comprises an oil, a perforated solvent, a hydrophobic ionic liquid, or mixtures th method of manufacturing the self-healing material comprises the steps of identifying an operational temperature range of the material, providing at least one subs the healing-agent, which substance remaining substantially in a liquid state within the operational temperature range, identifying an operational evaporation rate o healing-agent and providing the substance with a curing time according to the evaporation rate.
[0005] Self-healing polymer composites are advanced materials designed to autonomously repair damages like cracks or breaks, extending the material's lifespa

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