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## Patent Search

Invention Title	REAL-TIME STRUCTURAL HEALTH MONITORING SYSTEM USING IOT AND AI
Publication Number	20/2024
Publication Date	17/05/2024
Publication Type	INA
Application Number	202441036554
Application Filing Date	08/05/2024
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	COMPUTER SCIENCE
Classification (IPC)	G06N0003080000, G01M0005000000, G06N0003040000, G06N0020000000, B64D0045000000

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**Abstract:**

A real-time structural health monitoring system that utilizes IoT and AI technologies to continuously assess the integrity and condition of civil infrastructure, such as bridge buildings. The system comprises an array of sensors deployed on the structure, which collect data on various parameters such as strain, vibration, temperature, and humidity. This data is transmitted wirelessly in real-time to a cloud-based platform using IoT protocols. Advanced AI algorithms, including machine learning and deep learning techniques, are employed to analyze the data, detect anomalies, and predict potential structural failures. The system provides early warning notifications to stakeholders, enabling proactive maintenance and ensuring the safety and longevity of the infrastructure.

**Complete Specification**

Description: A real-time structural health monitoring system that utilizes IoT and AI technologies to continuously assess the integrity and condition of civil infrastructure, such as bridges and buildings. The system comprises an array of sensors deployed on the structure, which collect data on various parameters such as strain, vibration, temperature, and humidity. This data is transmitted wirelessly in real-time to a cloud-based platform using IoT protocols. Advanced AI algorithms, including machine learning and deep learning techniques, are employed to analyze the data, detect anomalies, and predict potential structural failures. The system provides early warning notifications to stakeholders, enabling proactive maintenance and ensuring the safety and longevity of the infrastructure. , C , Claims:[24] A smart structural health monitoring system comprising:

[25] A plurality of sensors configured to be attached to or embedded within a structure, wherein said sensors are capable of measuring structural parameters indicative of damage;

[26] A data acquisition unit communicatively coupled to said sensors and configured to receive and transmit sensor data;

[27] An AI-driven damage identification module comprising one or more machine learning algorithms, wherein said module is configured to analyze said sensor data and identify patterns indicative of damage; and

[28] A notification system configured to generate alerts upon detection of potential damage, including information on the location and severity of said damage.

[29] The system of claim 1, wherein said machine learning algorithms comprise supervised learning algorithms trained using historical sensor data labeled with known damage types.

[30] The system of claim 2 wherein said AI-driven damage identification module is further configured to adaptively learn and improve damage identification accuracy over

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Page last updated on: 26/06/2019