(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :11/01/2024

(21) Application No.202441002310 A
(43) Publication Date : 09/02/2024

(54) Title of the invention : MACHINE LEARNING BASED REAL-TIME ROBOTIC INSPECTION PLANNING AND MAINTENANCE SYSTEM FOR INDUSTRIAL EQUIPMENT

(51) International classification :G06N0020000000, G06Q0010040000, G05B0023020000, G06Q0010060000, G06Q0010000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
MACHINE LEARNING BASED REAL-TIME ROBOTIC INSPECTION PLANNING AND MAINTENANCE SYSTEM FOR INDUSTRIAL EQUIPMENT ABSTRACT The invention pertains to a real-time robotic inspection planning system for industrial equipment. A robotic inspection device, equipped with sensors and cameras, collaborates with a processor executing adaptive path planning algorithms. The system incorporates a real-time data transmission module that transmits data to a control center. Integral to the processor is a machine learning module, analyzing both historical and real-time inspection data. This module optimizes and adapts the path planning algorithms by identifying patterns and trends in the condition of the industrial equipment. The invention enhances adaptability through dynamic sensor configuration, provides condition-specific path optimization, and supports collaborative decision-making through a user interface. Feedback-driven learning refines the system's performance, while multi-modal data fusion ensures a comprehensive equipment analysis. Predictive maintenance scheduling and enhanced connectivity features further contribute to the system's efficiency and effectiveness in industrial inspection and maintenance.

No. of Pages : 14 No. of Claims : 8