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REVIEWER'S REPORT

Manuscript No.: IJAR-55849

Title: AI-Based Programmed Digital Maintenance Framework of Port Cranes.

Recommendation:

Accept as it is .....

Accept after minor revision.....

Accept after major revision .....

Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity		✓		
Significance		✓		

Reviewer Name: Mr. Bilal Mir

Reviewer's Comment for Publication.

The manuscript presents an AI-based, closed-loop digital maintenance framework for port cranes by integrating digital twin technology with CMMS and ERP systems. The topic is highly relevant to modern port operations, where reliability, safety, and efficiency of heavy equipment are critical. The proposed framework aligns well with current trends in predictive maintenance and smart port development.

Strengths:

- The study addresses a practical and industry-relevant problem associated with crane maintenance in ports.
- Integration of digital twins, AI, CMMS, and ERP into a closed-loop framework is conceptually sound and well motivated.
- The paper clearly explains how predictive maintenance can reduce downtime and improve resource utilization.
- System architecture and implementation approach are logically structured and easy to follow.
- The discussion on benefits, challenges, and future outlook adds balance and practical insight.

Areas for Improvement (Minor Revisions Suggested):

1. **Technical Depth:**
   The manuscript would benefit from more technical details on the AI models used (e.g., type of algorithms, training approach, and validation methods).
2. **Results Section:**
   The Results and Discussion section is largely conceptual. Including a case study, simulation results, or quantitative performance comparison would significantly strengthen the contribution.
3. **Language and Style:**
   Minor grammatical errors, repetition, and awkward phrasing are present and should be corrected through careful proofreading.

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4. **References:**
   The reference list is very limited and generic. More recent and specific scholarly references should be added to support claims related to digital twins, predictive maintenance, and AI-based asset management.
5. **Formatting Consistency:**
   Section headings (e.g., "proposed Digital Maintenance Framework") should follow consistent capitalization and formatting.

Overall Assessment:
The manuscript proposes a relevant and promising digital maintenance framework for port cranes with clear practical implications. With **minor revisions** focusing on improving technical depth, strengthening results, refining language, and expanding references, the paper would be suitable for publication.