International Journal of Business and General Management (IJBGM)
ISSN (P): 2319–2267; ISSN (E): 2319–2275
Vol. 12, Issue 1, Jan–Jun 2023; 35–46

International Academy of Science, Engineering and Technology
Connecting Researchers; Nurturing Innovations

AI-DRIVEN OPTIMIZATION IN ROBOTIC PROCESS AUTOMATION: IMPLEMENTING NEURAL NETWORKS FOR REAL-TIME IMPERFECTION PREDICTION

Rajya Lakshmi Gudivaka
Wipro, Andhra Pradesh, India

ABSTRACT

The AI-driven optimization solution presented in this research is intended to address major production issues such as delamination and warping dynamically. The technology greatly improves the capacity to identify and anticipate faults, which boosts production efficiency. This is achieved by combining neural networks with robotic process automation (RPA). With a training accuracy of 98.3% and a validation accuracy of 97.1%, with a prediction time of only 14 milliseconds, the Hybrid Neural Network Model—which integrates both Convolutional and Recurrent Neural Networks—showed remarkable performance. With its capacity to cut material waste by 20.4% and detect flaws with high accuracy, the system has the potential to revolutionize automated manufacturing. This AI-driven solution's modular design makes it simple to incorporate into current manufacturing procedures, providing a scalable and practical means of raising quality and cutting costs.

KEYWORDS: *AI, Robotic Process Automation, Neural Networks, Real-Time Defect Detection, Manufacturing.*

Article History

Received: *03 Mar 2023* | ***Revised:*** *09 Mar 2023* | ***Accepted:*** *14 Mar 2023*