

**MBA20**

## **ENHANCING PREDICTIVE MAINTENANCE ACCURACY WITH SCALABLE MACHINE LEARNING**

Abhijeet Kumar<sup>1,2</sup>, Victor Prybutok<sup>3</sup>

<sup>1</sup>Joplin, Joplin, Joplin, USA. <sup>2</sup>Missouri Southern State University, Joplin, Missouri, USA.

<sup>3</sup>University of North Texas, Denton, Texas, USA

### **Abstract**

This study explores scalable predictive maintenance using machine learning, focusing on SMART sensor data from a data center. It evaluates decision tree-based algorithms (CTree, Random Forest) and logistic regression, with Random Forest achieving up to 80% accuracy in predicting equipment failures. The findings emphasize integrating predictive maintenance with IoT and decision support systems to enhance operational efficiency, reduce downtime, and support proactive maintenance. These findings contribute to the evolving landscape of Industry 4.0, where data-driven maintenance strategies are crucial for sustaining industrial competitiveness.

### **Conference Track**

MIS and Business Analytics