IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 3, June 2025
Impact Factor: 7.67

Flight Delay Prediction System Using Deep Learning Models (Bi-LSTM)

Prof. M. P. Desai[1], Rutuja Jadhav[2], Vaibhav Salunkhe[3], Tameem Shaikh[4], Abhay Surwase[5]
Professor, Department of Information Technology[1]
Student, Department of Information Technology[2,3,4,5]
Smt. Kashibai Navale College of Engineering, Pune, Maharashtra, India

Abstract: *Flight delays present significant operational and financial challenges to airlines and inconvenience to passengers. This paper proposes a **Flight Delay Prediction System** utilizing advanced machine learning techniques, particularly **Bi-Directional Long Short-Term Memory (Bi-LSTM)** and **CNN-LSTM hybrid models**. Historical and real-time flight data, weather conditions, and operational features are leveraged to enhance predictive accuracy. The system architecture integrates a React.js frontend, a Node.js backend, and Python-based ML models, with MongoDB managing historical records. The proposed model achieves high prediction accuracy, demonstrated through extensive testing and evaluation. This solution offers substantial potential in improving airline operational efficiency and enhancing passenger travel experience*

Keywords: Flight Delay Prediction, Bi-LSTM, CNN-LSTM, Machine Learning, Real-Time Data, Aviation Analytics

DOI: 10.48175/IJARSCT-27567