Chapter 6
AI-Driven Predictive Analytics for Enhancing Automotive Safety in Financial Risk Assessments in Cloud Data

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ABSTRACT

Prediction technologies based on AI drive crucial automotive safety and financial risk assessment which results in minimizing losses as well as increasing road safety. A Hybrid AI-Econometrics Model which merges machine learning algorithms with econometric systems serves as the main proposal to estimate and quantify economic consequences linked to automotive accidents. TensorFlow performs deep learning

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operations within the framework alongside Statsmodels to analyze telematics data, insurance claims data and macroeconomic data for determining risks of accidents and their connected financial costs. The model uses deep learning algorithms to find patterns in accidents before calculating financial risk through GARCH (Generalized Autoregressive Conditional Heteroskedasticity) and Vector Autoregression The model provides both accurate predictions and understandable results which make it acceptable for various users including insurers and governmental agencies and automotive industries. The research shows better assessment capabilities as the model enhances protective driving environments

I. INTRODUCTION

The integration of artificial intelligence (AI) with econometric models is being explored as a transformative solution for automotive safety and financial risk assessment. The research uses a Hybrid AI-Econometrics Model, which combines deep learning with econometric techniques to enhance risk assessment in the automotive sector. This approach improves predictive accuracy (Khadka, M. et al., 2025) and interpretability by analysing real-time data from telematics, IoT sensors, insurance databases, and economic indicators. The hybrid methodology strengthens proactive accident prevention mechanisms and is more robust and scalable than conventional models as developed by (Boinapalli, N. R. et al., 2023). The proposed model combines deep learning with econometric techniques to improve predictive accuracy and interpretability in automotive safety. Tensor Flow and Stats models are used for pattern recognition and forecasting (Pandey, B. K., & Pandey, D., 2025), analysing accident trends and financial liabilities. This AI-driven approach enhances risk mitigation by analyzing real-time data from telematics, IoT sensors, insurance databases, and economic indicators. The study aims to bridge the gap between AI and financial risk evaluation in the automotive sector as supported by (Jahin, M. A. et al., 2025).