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**Dedicated to**

**My loving parents and wife ...**



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## List of Abbreviations

**ADASYN** Adaptive Synthetic Sampling

**AUC-ROC** Area Under the Receiver Operating Characteristic Curve

**ARIMA** Auto-Regressive Integrated Moving Average

**BBS** Bitumen-Based Speed Breaker

**CM** Confusion Matrix

**DWT** Discrete Wavelet Transform

**FFT** Fast Fourier Transform

**FIR** Finite Impulse Response

**GNB** Gaussian Naive Bayes

**GPS** Global Positioning System

**KDE** Kernel Density Estimation

**KNN** k-Nearest Neighbor

**LCV** Light Commercial Vehicle

**LSTM** Long Short-Term Memory

**ML** Machine Learning

**MSE** Mean Square Error

**NB** Naive Bayes

**PCVE** Passenger Car Vibration Equivalence

**PRC** Precision Recall Curve

**RF** Random Forest

**RMS** Root Mean Square

**ROC** Receiver Operating Characteristic

**RVEL** Reference Vibration Emission Level

**SGD** Stochastic Gradient Descent

**SVM** Support Vector Machine

**SUM** Summation of Squared Amplitudes

**TIR** Trucks and Intermediate Rigid Vehicles

**VMD** Variational Mode Decomposition

**WBS** With Balancing and Stacking

**WBwSRF** With Balancing without Stacking using Random Forest

**WBwSXGB** With Balancing without Stacking using XGBoost

**wBWS** without Balancing With Stacking

**wBwSRF** without Balancing without Stacking using Random Forest

**wBwSXGB** without Balancing without Stacking using XGBoost

**XGB** Extreme Gradient Boosting

**XYZ** Tri-Axial Directions (X, Y, and Z axes)