ABSTRACT

Electromagnetic Interference (EMI) is a phenomenon that can disrupt the performance of electronic devices, particularly in power systems such as Switched-Mode Power Supplies (SMPS). This interference can lead to efficiency reductions, increased electromagnetic emissions, and potential non-compliance with regulatory standards. Therefore, accurate prediction methods are needed to identify and mitigate the impact of EMI on electronic devices.

This research develops an EMI prediction model using Multiple Linear Regression (MLR) and Neural Network (NN) approaches. The data used in this study consists of two signal types: Lorenz signal and Ramp signal, which have different characteristics in representing EMI patterns. The MLR model is employed to understand linear relationships between system parameters and EMI, while NN is applied to capture complex non-linear relationships within the data.

The results indicate that the combination of MLR and NN improves prediction accuracy compared to conventional methods. Additionally, the comparative analysis reveals that Lorenz and Ramp data exhibit unique characteristics that influence model performance differently. This study provides new insights into the application of machine learning techniques for EMI mitigation in electronic devices.

Kata Kunci: *EMI, Multiple Linear Regression, Neural Network, Lorenz Signal, Ramp Signal, SMPS.*