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Data Science Driven Solution to Predict Employee Attrition: A Systematic Review

PK Kosgahakumbura[1#], YB Hettiarachchi[1], DR Peiris[1], RP Hewage[1], ST Hewaarchchi[1], KD Madhubhashani[1], SMM Lakmali[1], and HRWP Gunathilake[2]

[1] Department of Computational Mathematics, Faculty of Computing, General Sir John Kotelawala Defence University, Sri Lanka

[2] Department of Computer Science, Faculty of Computing, General Sir John Kotelawala Defence University, Sri Lanka

[#]38-dba-0005@kdu.ac.lk

Employee attrition refers to leaving employees from the organization due to various reasons. Understanding and predicting employee attrition is crucial for organizations seeking to enhance employee retention and reduce turnover costs. This systematic literature review aims to analyze and compare existing research focused on predicting employee attrition using Machine Learning and Deep Learning techniques. The primary purpose was to identify the most effective models, feature selection methods, and performance evaluation measures employed in the literature from 2016 to 2024 for predicting employee attrition. The review examined 33 selected papers, each evaluated using 5 research questions designed to assess the methodologies and outcomes of different studies. It was found that a wide range of models, including Decision Trees, Random Forests, Deep Neural Networks, Long Short-Term Memory Networks, and Convolutional Neural Networks, were utilized to predict employee attrition. Many studies conducted comparative experiments, testing multiple models to determine the most effective ones. Notably, datasets from IBM and Kaggle were frequently used by researchers, providing a common basis for comparison. The findings emphasized the critical role of feature selection techniques in improving the accuracy of attrition predictions. Engaging in systematic literature reviews not only refines research focus but also helps identify gaps in existing studies, offering valuable insights for developing effective employee retention strategies and guiding future research.

Keywords: *employee attrition, Machine Learning, Predictive Models, classification*