

**UTILISING MACHINE LEARNING AND XAI TO
EVALUATE AND FORECAST EMPLOYEE TURNOVER
INTENT AMONG SOFTWARE ENGINEERS IN SRI
LANKA**

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Abstract

The IT industry experiences a significant level of employee turnover due to the tremendous demand it faces. Within a range of employee classifications, software engineers play significant roles within the IT sector. As a result of the swift expansion of IT advancements, there is an equal increase in the demand for these professionals. Many organisations are currently experiencing significant turnover rates, resulting in inefficiencies in production, reductions in client base, increased costs, and other negative consequences. The primary aim of this study is to identify the key elements that influence turnover intentions and establish the correlation between these variables. The primary variables under consideration encompass job satisfaction, alternative job opportunities, recognition, organisational support, job stress, and organisational commitment. In addition to the primary objective, an evaluation is conducted on the capacity to construct a machine learning model for the purpose of predicting turnover intentions. Data was collected from a sample of 228 people employed in the information technology (IT) sector. The variables of job satisfaction, job recognition, organisational support, and organisational commitment exhibit a moderate negative correlation with turnover intention, whereas alternative job opportunity and job stress demonstrate a moderate positive correlation with turnover intention. Various machine learning algorithms are employed to model the data, among which the RandomForestClassifier stands out for its ability to produce very accurate results. Specifically, it achieves a testing accuracy of about 92.5%, accompanied by 93% precision and recall scores. To provide explainability to the model's predictions, the LIME (Local Interpretable Model-agnostic Explanations) framework is employed for eXplainable Artificial Intelligence (XAI). According to the findings of the study, it has been asserted that among the six primary variables examined, namely job stress, alternative job opportunity, and organisational commitment, these factors exhibit the most substantial influence on the dependent variable. It is strongly advised to do a thorough analysis of variables that are considered insignificant.