

Predicting Employee Turnover Intention of Frontend and Backend Developers in Sri Lanka with the Use of Machine Learning Approach

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The IT industry is rapidly developing due to technological advancements, and backend and frontend developers are playing a crucial role in its success. However, high turnover rates among these developers are a significant challenge for companies, and identifying the factors that influence employee turnover is crucial. A study was conducted using an online survey questionnaire and 203 data were collected. Logistic Regression was used to assess the significant variables which affect the turnover intentions and a machine learning model was developed to predict turnover intentions. The process involved collecting data through an online questionnaire, pre-processing and feature engineering, splitting the data into training and testing sets, building and evaluating various statistical machine learning algorithms using accuracy score, precision, recall and confusion matrix, selecting the best model, saving it as a pickle file, and hosting it using AWS Lambda, AWS S3, and AWS API GATEWAY services. A web interface was also created to provide users with analysis and feature importance graphs as well as the ability to make predictions by uploading evaluation sheets. Predictions were captured through an API call to the hosted model, and the results could be downloaded in a .csv format. The results showed that job satisfaction, recognition, organizational support, and organizational commitment had a moderate negative relationship with turnover intention. In contrast, alternative job opportunities and job stress had a moderate positive relationship. Organizational commitment, job stress, and alternative job opportunities were identified as the most significant variables affecting turnover intentions. Support Vector Machine was identified as the best model with 100% test accuracy and it was hosted in cloud services to get the predictions. Overall, this approach could be useful in identifying employees at risk of turnover and in enabling companies to take proactive measures to retain their valuable employees.

Keywords: Backend Developers, Frontend Developers, IT Industry, Machine Learning, Turnover Intentions