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## **A machine learning-based predictive model to identify bond violators in the public university system**

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Academic staff members of public universities violating the terms in their agreements with the employer and thereby with the Government of Sri Lanka when obtaining overseas leave is a serious issue in the public university system. From a sustainable development perspective, it is vital for a country to have highly skilled intellectual capital in the higher education system to train the required workforce to the country as well as to lead advanced research and other technology transfer initiatives. However, due to various reasons, a significant percentage of the academic staff members who obtain paid leave to study in developed countries to fulfil their postgraduate qualifications do not return after completing their studies, even though they have signed a bond before going abroad. According to a list published by the University Grants Commission (UGC) of Sri Lanka in 2018, 486 academics have not returned to Sri Lanka after completing their postgraduate studies, owing 813 million rupees as the total bond value to be paid. With the data science boom, many organizations have looked forward to predicting employee attrition or churn, aiming at recruiting and retaining the right talent to the organization. However, such an analysis has not been conducted in the state university system to date. Machine learning, which is a branch of artificial intelligence is a fast-growing technology that helps to recognize patterns from data. This research study is an attempt to build a machine learning-based classification model to predict the bond-violating behaviour of academic members in the public university system using the publicly available data on the Internet. The publicly available data such as the data made publicly visible on social media accounts by their owners, research repositories, university websites, as well as the published list of bond-violators by the UGC, enables to construct of a dataset of bond violators and non-violators, which could be used to train supervised machine learning models for binary classification. This study presents the modelling details, preliminary results, and subsequent analysis of the results.

**Keywords:** Brain drain, university academics in Sri Lanka, machine learning

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