EXISTING LABORTURN OVER PREDICTION: Policy Document

Policy Document

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Declaration

I declare that this is my own work, and this policy document does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other university or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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The turnover rate of a corporation implies that its employees have decided to quit. Employee turnover has become increasingly prevalent along with the rapid growth of the economy and businesses in recent years. On the one hand, employees decide to quit the organization for a variety of reasons. On the other hand, employee retention and job security affect the business's usual operation. Companies must comprehend the primary causes of employee turnover and make appropriate efforts to address this issue.

In contrast to physical systems, human resource issues cannot be explained using a scientific formula. Consequently, machine learning and deep learning approaches are the most effective methods for achieving this objective. The purpose of this study is to present a methodology for predicting employee churn by applying classification algorithms to analyze the particular behaviors and qualities of the employee.

In accordance with the standard machine learning pipeline, this paper presents a five-stage framework for predicting employee attrition (data retrieval, data preparation, modeling, model evaluation & tuning, and deployment). Our work was tested using the IBM analytics imbalanced dataset, which contains 35 features for 1470 employees. We created a balanced version from the original using SMOTE and ADASYN oversampling techniques to obtain realistic results.

This study aims to examine the effectiveness of deep learning techniques like Artificial Neural Networks classifiers and machine learning techniques like Logistic Regression and Random Forest classifiers. In this study, cross-validation and parameter-tuning strategies are used for optimization in order to address overfitting problems. The optimized LR model, which had the highest AUC score of 0.74 compared to the other classification models tested, emerged as the best model that can be used to forecast employee attrition, according to the comparative study on the three classifiers. ANN and RF were second and third, respectively. We discovered that employee factors, including monthly income, age, daily rate, total working years, and overtime, significantly impact turnover.

1. Introduction

Employee Attrition is the term used to describe employees who quit an organization for personal, work-related, financial, or environmental reasons. There are two distinct types of employee turnover: voluntary and involuntary. Involuntary attrition is the termination of employees by their employers for reasons such as poor performance or operational demands. In contrast, high-performing workers who choose to leave the company voluntarily do so despite efforts made by the employer to keep them there. For instance, early retirement or employment offers from other companies are two examples of voluntary attrition. Although organizations that value their workers frequently invest in them by providing extensive training and a positive work environment, the organizations also experience voluntary attrition and the loss of brilliant workers. Hiring replacements is another problem that comes at a substantial cost to the business, including the price of recruiting, hiring, and training.

Employee attrition can be prevented or at least lessened by management if it is foreseen before it happens. According to some research, motivated workers are more likely to be innovative, productive, and effective. Based on predictive models that can be created for this purpose, organizations can use their HR data to generate such forecasts. Artificial intelligence (AI) is being used in a wide range of industries, including business, government, healthcare, and education. The use of AI to forecast employee attrition has attracted a lot of recent scientific interest. Additionally, the growing body of information on this subject encourages more research in the area.
This paper mainly focuses on predicting existing labor turnover using machine learning and deep learning techniques. More specifically, using logistic regression, random forest, and artificial neural networks. The IBM HR dataset has been used to train and test the machine learning model. This dataset includes a total of 1470 records and 35 features. The target column "Attrition" mainly consists of two classes. (Yes, for employees who left and No, for employees who are still staying). These samples are highly imbalanced; there are only 237 (16.12%) positive samples (employees left) and 1233 (83.88%) negative samples (employees staying). This highly imbalanced dataset makes it difficult to make predictions.
The corporate network infrastructure of the Council includes wireless local area networks, or LANs. The wireless network must adhere to the same degree of security standards as the rest of the infrastructure in order to safeguard the Council's business requirements.

The purpose of this policy will ensure that wireless networking deployments are centrally regulated and managed to deliver optimal service levels and functionality while keeping network security.

The aim of this policy is to lay out who is liable for what when it comes to designing a new wireless network, setting up, registering, and maintaining wireless access points and devices, controlling the wireless frequency spectrum appropriately, and providing end users with wireless access services.

WPA2 is used to encrypt the Council's WiFi network, offering secure authentication based on the Advanced Encryption Standard (AES).

2. Purpose

A standardized set of guidelines and operational requirements for the efficient administration of 802.11 wireless LANs are provided by this policy. Owing to the nature of wireless technology, all advancements in this field must be planned, implemented, and overseen with extreme caution, adhering to the Council's information security policy.

The wireless policy will focus on three key areas, which are as follows:

Security - Buildings are no longer an appropriate way of restricting access to the network since wireless LANs provide connectivity for everybody within range of an access point. It is forbidden to install unapproved devices because they raise the possibility of a data network security breach and may be set with minimal or no security.

Non-Standard Devices - Non-standard or improperly configured wireless devices have the potential to interrupt wireless LANs, which can subsequently impact wired networks. Because of this, the Council prohibits the installation of any non-standard wireless access points. Only wireless network equipment that has been approved and installed by the ICT Service is permitted to be used on the Council's network.

Interference – Wireless technology that complies with 802.11 employs frequencies from a band that is divided into channels. Each access point needs to utilize a different channel in order for nearby access points to operate together without interfering with one another or resulting in performance issues.

3. Policy Statement

Scope

This policy protects all wireless locations connected to the Council's network infrastructure, including any far-flung locations directly attached to the Council's data network, any wireless devices operating within the Council's IP address range, and any of the Council's structures. The policy describes the rules that users must follow in order to use the Council's wireless services, as well as the potential implications for breaking them.

The network infrastructure to the Council is currently under the supervision of the ICT Service. Considering the wireless network is an extension of this network, the Council's wireless LAN planning, implementation, and operation fall under the jurisdiction of the ICT Service.

Policy Restrictions

i. All wireless devices and access points used by personnel on the Council's secure wireless network must adhere to all applicable national laws, guidelines, and standards as well as suggested specifications as laid out by the ICT Service.
ii. In compliance with the Council's living buying policy and IT Standards, the ICT Service is required to acquire and install any new access points and wireless devices used by staff on the secure wireless network.
iii. The ICT Service standard configuration settings must be conformed to by all access points and wireless devices used by staff members on the Council's secure wireless network.
iv. It is not permitted to install any non-standard wireless devices or access points.
v. Any unapproved or non-standard devices that can interfere with already-approved access points or devices might be disabled by the ICT Service. These gadgets might be taken out without warnings.
vi. The ICT Service periodically performs wireless network monitoring.

vii. Regularly and at random, audit penetration tests employing instruments and knowledge commissioned from independent outside companies will be used for wireless security testing. However, an Assistant Director of ICT and the Assistant Head of Finance (Audit) must consent in advance of any penetration testing conducted by Audit Services. Using the Council's network for unlawful wireless security testing is punishable by disciplinary action up to and including gross misconduct.

viii. The ICT Service must be used to make any new requests for the installation of wireless devices or access points.

ix. Wireless hot spots in the public facilities that belong to the Council could provide unauthenticated open access to the Internet apart from the protected wireless network. Internet filtering will apply to access from mobile devices and personal PCs.

Appropriate Use

The Council encourages employees and other authorized users to make suitable and correct use of the services and facilities it offers. The Council's secure wireless network is only accessible by devices with certified hardware and software.

The violation of contractors, agency worker's partners/agencies, or third-party entities with this policy could lead to the termination of contracts and connections, suspension of services, and, if applicable, the Council's pursuit of recompense for any consequential losses. Inappropriate use of the Council's wireless networks will be reported to the police when the Council deems it appropriate.
Disciplinary action may be taken against workers who disregard this policy.

Regulatory Framework

The correct legal framework, including rules and regulations for the appropriate use of certain Council properties and services, must be established by the Council. In this framework, the Wireless Network Policy is one component.

The Internet and email policies, Safe Haven policy, information security policy, and acceptable utilization policy of the Council, alongside other related policies and regulations, apply to business use of all ICT facilities that the Council administers.

Acceptance

All users of information and ICT systems under the authority of Derbyshire County Council must acknowledge and abide by the Council's Acceptable Use Policy, any applicable security rules, and the applicable Codes of Connection and Conduct.

4. Roles and Responsibilities

Every wireless LAN is monitored and maintained by the ICT Service. Any wireless device or access point connected to the Council's network infrastructure is now under the control of the ICT Service.

User responsibilities

It is obligatory for users of the Council's secure wireless network to get advance permission from the ICT Service before connecting any illegal equipment to the Council data network. The user will participate in the equipment's removal from the network if the ICT Service determines that it might be the reason of an unbearable decline in network performance or present an issue with security.

All users must abide by the relevant Codes of Connection and Conduct, associated security guidelines, and the Council's Acceptable Use Policy when using licensed wireless equipment.

Apart from notifying visitors about the availability of the guest "Open" wireless network, no information on the wireless network, including setup and configuration data, should be disclosed to unapproved users, third-party providers, or the public.

Using the Council's wireless network to transmit, receive, or make available any information that may be interpreted as objectionable, pornographic, indecent, or illegal is prohibited.

5. Breaches of policy

Events that contravene the Council's security procedures and regulations, or that may have resulted in or really did cause loss or harm to Council assets, are classified as security incidents and/or violations of this policy.

All employees, elected officials, partner organizations, contractors, and suppliers have an obligation to promptly report security occurrences and policy breaches through the Council's Incident Reporting Procedure. This obligation also extends to any outside firm that the Council hires to maintain or get access to its information systems.

Consultants, contractors, or other third parties risk having their access to the system instantly withdrawn if they violate the rules. If the third party's noncompliance damages the Council's ICT systems or network, the Council may pursue legal action against them. The Council will handle any policy infractions by taking appropriate action using the existing processes. In the event that it is discovered that an employee may have broken this policy, the disciplinary process may be used to address the matter.

6. References

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