Indian Institute of Technology Indore

Discipline of Computer Science and Engineering

Minor Project in the course “Computational Intelligence”

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Title: Term Deposit Prediction

Abstract

A bank's primary revenue stream comes from term deposits. An investment in cash maintained by a financial institution is known as a term deposit. A predetermined period, or term, during which your money will be invested at an agreed-upon interest rate. The bank uses a variety of outreach strategies, including email marketing, ads, telemarketing, and digital marketing, to reach out to its clients and sell them term deposits. The best of many ways to connect with consumers is through telephone marketing. Nevertheless, because enormous contact centers are used to carry out these operations, a significant expenditure is necessary. Therefore, to target consumers with calls that are precisely directed at them, it is essential to identify the customers who are most likely to convert in advance.

Unsupervised learning and supervised learning are two main categories into which machine learning approaches may be divided. Supervised learning is the most common method, where each training tuple's class label is known. The supervised learning methodology has been applied in many papers that we have referred to. Support Vector Machine (SVM) is utilized for classification and regression issues and produces excellent results in various fields. The SVM classifier aims to distinguish the target classes from the other classes by as much margin as feasible. SVM is used to separate each data element in the n-dimensional feature space. The SVM-created hyperplane then divides particular objects into the proper categories. An artificial neural network is an electronic model based on biological neurons. It is a group of nodes that are kept linked together via a directed connection. Comparing the Artificial Neural Network (ANN) method to other classification techniques, there are several advantages. An ANN attempts to create a model from an input value that should be able to forecast a target value. The Multilayer Perceptron Function is the construction method used to create ANNs in the Waikato Environment for Knowledge Analysis (WEKA). The Multilayer Perceptron (MLP) is trained

using the Back Propagation Algorithm (BPA) (MLP). It uses the input, hidden, and output layers and is the most used NN learning approach.

Our approach for solving the problem includes utilizing linear regression when choosing features selecting the ideal k for the model by utilizing accuracy. Creating a confusion matrix and determining the categorisation metrics for each step (for comparison). One of the most often used classifiers for categorization in the banking industry is Naive Bayes (NB). The Naive classifier Bayes predicts class membership probability and engages in probabilistic prediction. A statistical classifier, commonly called a naive Bayes classifier, bases its predictions on the premise that predictors are independent of one another. A technique for developing the oversampling idea called SMOTE (Synthetic Minority Over-sampling Technique) creates synthetic samples based on object properties and k-NN during its operational phase. SMOTE multiplies the quantity of minor class data to balance the significant class. According to specific sources, SMOTE can balance the data class and raise the dataset's overall quality for modeling purposes.

References:

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