Artificial Intelligence Use in to Decrease the Efforts during the Process of Loan

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***Abstract*- The objective of this paper is to calculate the proportion risk and to see whether or not the soul will get a loan, to cut back the efforts throughout the method of loan, and it additionally verify the appropriate quantity of loan which will be borrowed by the soul. Loan analysis may be a massive drawback for the banks whereas process their work. It's a time taking method and additionally it's terribly risky.**

Victimization artificial neural network, the bank will calculate the proportion risk and overcome this drawback. With the assistance of feed forward network and back propagation algorithmic program we will verify whether or not the soul is appropriate for borrowing the loan or not.

Index Terms- Artificial Neural Network, Credit rating System, training, Artificial Intelligence, Prediction

I. INTRODUCTION

The main role of the banks is to require cash from the individuals at a specific rate of interest and so disposal it to others at a rate that is more than the speed taken from the individuals. This manner banks perform in a very healthy economy. However real drawback arises once individuals borrow from the bank however within the finish doesn't seem to be ready to repay the loans resulting in dangerous loans for the banks. This has been a awfully major reason behind concern particularly once the economy of the globe is moving at a awfully quick pace. Dangerous Loans reduces the potency of banks in any monetary setup and is incredibly dangerous for the economy. The higher the bankers, the additional economically developed a rustic is. They're the engines of Associate in nursing economy. Banks face issues like the chance of non-repayment of received loans at the maturity. This probability of non-repayment of loans at the collectable date is termed as Credit Risk. Credit Risk may be a generally studied topic in banks disposal choices and cost- effectiveness. Borrowers sometimes have the higher data for comes to be supported, however lenders sometimes don't have spare data concerning comes. If a bank has smart customers it's additional seemingly to extend its potency and permit the banks to lend additional however here may be a contradictory case of banks itself going bankrupts after they face dangerous loans and dangerous customers. Risk analysis of loans in monetary markets is one in every of the foremost tools which will be applied with neural networks. Artificial Neural Networks play Associate in nursing progressively vital role in monetary applications for pattern recognition, classification and varied others like statistic foretelling. Credit Risk depends upon variety of things and might be divided into 2 groups- one among the organization and also the alternative outside the organization. i.) Factors outside the banks don't seem to be below the orbit of banks and can't be controlled by banks. These factors embody Political Changes, Earthquakes, and War etc. ii.) Factors within the banks are the factors that the bank organization has their hold upon. These referred to as Endogenous factors. [2] During this analysis we have a tendency to are attempting to seek out out the factors that are endogenous to the banks and are poignant the credit risk of the banks considerably. the most purpose of this project is to spot the vary of things that play a awfully significant role in credit risk analysis and thereby once analyzing the vary of things we are going to try and come back up with a Credit Rating which may incline to each client of the bank. The advantage of Credit Rating would be specified if the client doesn't possess the spare credit rating, he won't be granted the loan. Likewise if the client will possess the desired credit rating he are going to be granted the loan. ANN model is employed during this analysis to attain the on top of mentioned. It consists of the input layer, hidden layer

and also the output layer which can be accustomed implement the delineated on top of.

II. LITERATURE REVIEW

Credit rating is one among technical consider credit risk analysis (Khashman, 2010). The aim of credit rating is to reason the candidates into 2 groups; candidates with smart credit and candidates with unhealthy credit (Ghodselahi & Amirma dhi, 2011). [9] Multilayer feed forward networks area unit a category of universal approximation (Hornik, Stinchcombe, & White, 1989). The construct of "universal approximation" is one among the basic and necessary options in ANN models. These models have a high prognostic power (Steiner, Neto, Soma, Shimizu, &Nievola, 2006). This implies that the networks area unit capable of adapting to impulsive and unknown practical forms, with associate degree at random mere degree of exactness. These non-parametric models area unit well-known in several areas, particularly in computing thanks to their highly-sophisticated pattern recognition (Hall, Muljawan, Suprayogi, & Moorena, 2009). Universal approximation leads North American nation towards concerning neural networks typically as versatile non- linear applied math strategies (Curry, Morgan, & Silver, 2002). Extracting rules from a neural network area unit totally different. Steiner et al. (2006) analyze credit risk information set by victimization the Neuro Rule extraction technique. Angelini et al. (2008) indicate pertinence of neural networks in credit risk applications, particularly as black- box non-linear systems to be employed in cohesion with classical rating and assortment systems. So as to forecast credit risk in banks, typically a mixture of strategies is employed. Pacelli and Azzollini (2011) conclude that neural network models together with linear strategies have any supported. [5] Use of modern indicators additionally to ancient money quantitative relations indicators provide consider able improvement in forecast accuracy (Atiya, 2001). Salehi and Mansoury (2011) investigate the potency of neural network and supply regression in prediction client credit risk. They state that each model have same potency. Credit rating is additionally investigated with different strategies of computer science. Ghodselahi and Amirmadhi(2011) Use a hybrid technique for credit rating. They use Support Vector Machine, Neural Networks and call Tree as base classifiers. They found that accuracy of this hybrid model is over different credit rating strategies. [9] Credit rating is additionally investigated with 3 strategies as well as supply Regression, Neural Networks and Genetic Algorithms (Gouvêa & Gonçalves, 2007). [10] According of this research's result, supply regression and neural networks area unit smart and similar. Though neural network is slightly higher and genetic algorithms take third place. The necessary roles of ANN in money application area unit pattern recognition, classification and statistic prediction (Eletter & Yaseen, 2010). [1] Some researchers specialize in learning approach in neural network models. During this field, Yu et al. (2008) use a time period neural network ensemble learning approach. They state that this system will give a promising answer to credit risk analysis.

III. METHODOLOGY

The methodology that's utilized in this study is that of computer science. Computer science may be outlined because the conveyance the intelligence to the machine so as to resolve advanced downside. for instance, identity verification, speech recognition, tongue process, artificial intelligence etc. computer science is that the coming up with the pc which may execute perform intimating humans like beholding, decision- creating etc. the required model is be achieved by artificial neural network. Artificial neural network is that the neural network designed to perform within the approach biological system. Its model when the human brain. It's created of extremely inter connected process components referred to as Neurons. The neurons square measure partal the basic element of the neural network. For any given downside, these neurons work along to attain the required result. A nerve cell is process unit. It several outputs and have just one output. There square measure primarily 2 mode of using the neurons. The primary mode is that the coaching mode within which we tend to train the nerve cell or the neural network. Then comes the mistreatment mode wherever the schooled nerve cell is employed for process and generating the output any neural network has 3 layers. These square measure input layer, hidden layer, output layer. The input layer consists of

the input neurons that act like input unit. All the weights square measure to be provided to the neural network square measure through input layer. The hidden layer acts like C.P.U. of the pc. This layer is accountable for adjusting the weights and mapping the input weights with the output weights. It transforms the inputs into one thing that the output layer will use. Finally, the output layer acts just like the output unit that produces the ultimate result.

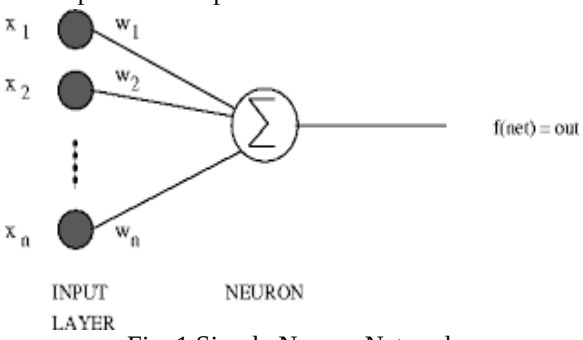

Fig. 1 Simple Neuron Network

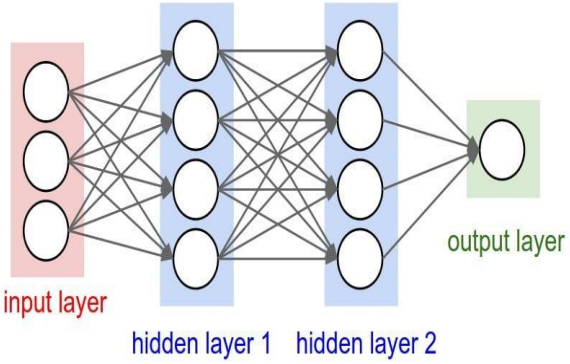

Fig. 2 Artificial Neural Network

IV. SYSTEM ARCHITECTURE

For deciding whether or not the someone ought to be approved for loan or not, there are a unit some factors for deciding that. These factors area unit essentially knowledge from the monetary history and monetary background of the someone. The model consists of eleven input nodes, ten hidden nodes and eleven output nodes. It accommodates 10-11 topologies. These higher than such as variables are extracted from the given knowledge and can be provided to the neural network because the input. Then the neural network is additionally given the target output for the mapping of the input variable to the corresponding output variable by adjusting the weights. The Activation operate is employed to ease this task. Associate degree activation operate of a node defines the output of that node given associate degree input or set of inputs. The eleven factors and their associated values area unit as follows:

TABLE.1. Loan deciding Factors

VARIABLE	VALUES
Age	1 if it is above 25 else 0
Income	0 if less than 3.25L pa, 1 if between 3.25 to 12L pa, 2 if more than 12L pa
Loan Amount	1 if less than 10L, 2 if between 10L to 20L, 3 for more than 30L
Account Type	1 for salary account, 2 for savings account
Residency	1 for resident, 0 otherwise
Job Experience	0 if less than 2 years, 1 if between 2 and 5 years, 2 for than 5 years
Debit Balance Ratio	1 if dbr is good, 0 otherwise
PAN Card	1 if the applicant has PAN Card, 0 otherwise
Guarantor	1 if the applicant has guarantor, 0 otherwise
Type of Company	1 if the company is endorsed by the bank, 0 otherwise
Nationality	1 if the nationality is Indian, 0 otherwise

V. EXPECTED RESULT AND CONCLUSION

The model was designed on MATLAB. The nntool (Neural Network Toolbox) was used for the designing and simulating the network. The Neural Network Toolbox provides user interface which allows you to import, create, use, and export neural networks and data. Using this tool we import our input data, target data and also test data. Target data for the training of the neural network and test data for the simulation of the neural network. As we have seen the credit worthiness of an individual can be calculated by using artificial intelligence system. The neural network can be very useful in analyzing the creditability of the customer and can improve the efficiency and also can speed up the time taken in loan approving process using Credit scoring system. Loan Analyzer using artificial neural network can also reduce the excessive work load on the loan officer and helps in quickly analyzing the creditability of the applicant and in making the

decision about the loan approval i.e. whether the loan for the applicant is approved or not.

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