

Artificially Intelligent Investment Risk Calculation system based on Distributed Data Mining

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Abstract:- In the present days of e-commerce and social engineering the use of artificial intelligent system and data mining is one of the most relevant issue. Several investment sector giants use highly developed data mining procedure to serve the users in a better method. So, Risk factor calculation Algorithms are one of the most important topics in Data Science and Social Engineering. I have developed a web based system that will be fitted with huge amount of transaction data from the financial sectors of the current and the previous days. Now, according to the data from the database our system will be able to approximately guide the user whether he or she should go for that investment, and what is the risk factor about that particular investment. Moreover, I have worked in another research project where we have tried to design an intelligent system that can be used to control the internal loan sanction process of a bank. In that system each of the employees will have a credibility and a target according to the seniority of the employee. Based on those two factors the entire process will work and the profit or loss will also be dispersed and the accounts of them will be maintained.

Index Terms- Investment and risk factor System, Data Mining, JSP, Web Development, Database, Artificial Intelligence.

I. Introduction

We intent to create an online banking site which is a website emphasizes on various topics of investment related matters only accessible to pre-registered user. We have rendered facilities to the registered user as they can compare any policy, may check their accounts etc. Moreover, we aim on creating a target based pyramid structure which basically mean to handle the whole employee structure in a Database.

We have operated on various languages and technology:--

1. HTML (Hyper Text Markup Language)
2. CSS (Cascading Style Sheet)
3. JAVASCRIPT
4. MYSQL
5. JSP (Java Server Page)

II. Motivation

Now-a-days financial sectors are taking big leap to provide their customers more efficient and effective services. People are friendlier with internet based banking-services as it is more time effective and secure. Moreover, people can get prior recommendations before any investment calculating the risk factor. So they can take more realistic and prudent investment decisions to secure their future. There is also a growing tendency of chain marketing structure where people get involved in also various branches of an organization and share the portion of profit/loss to create a more interdependent money making structure. That's why we have developed a platform which can serve to fulfill all the needs of the customers and also the whole organization which are involved in any kind of public services.

We also put our conscious effort to make the web based system effective and efficient by introducing our own algorithm behind it. The methodology section describes the algorithm in detail with mathematical notations.

III. Methodology

In the following section we are going to describe the methodology of the project we have done:

A. Flow Diagram

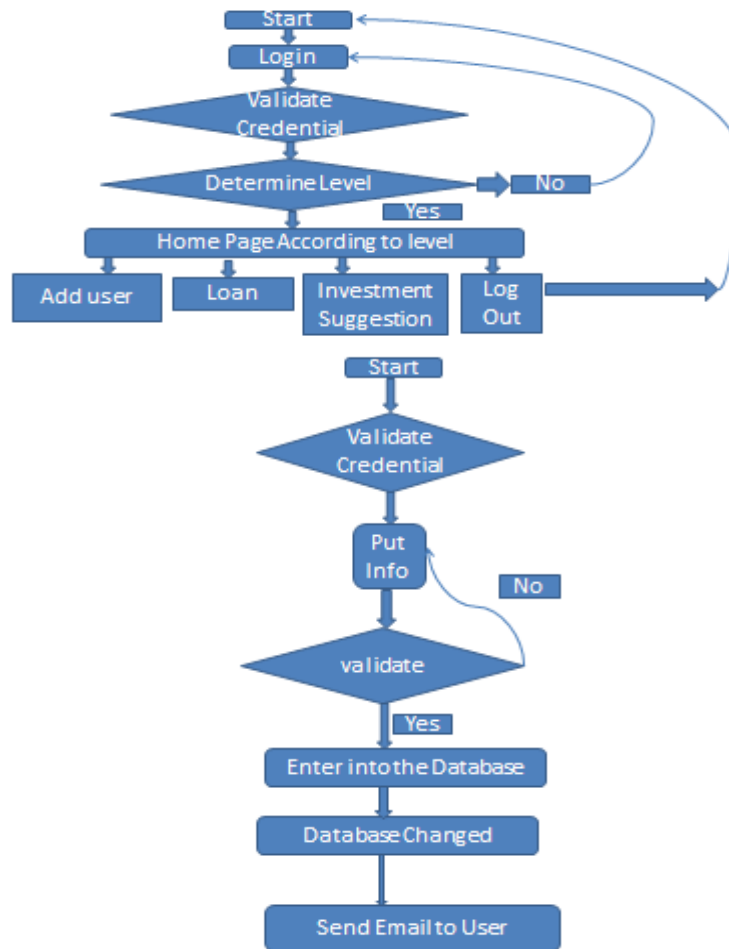
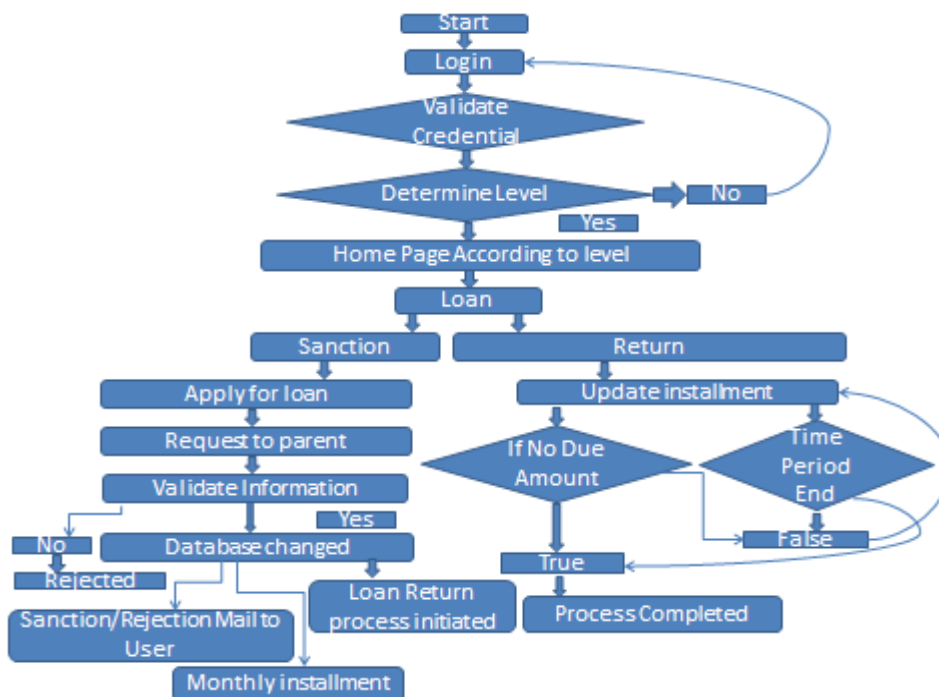


Figure 1: Home page

Figure 2: Add User



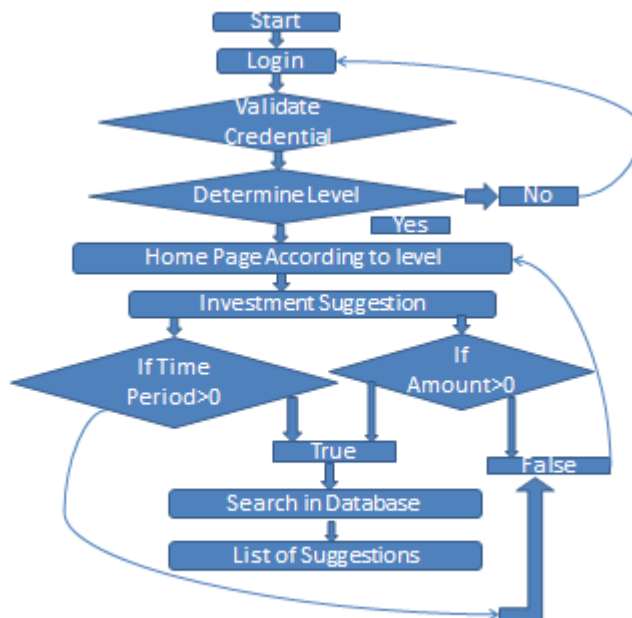


Figure 3: Loan sanction and return

Figure 4: Investment suggestion

The Figure 1 describes the flow diagram of the Home Page that comes to the user at the very beginning. At first the system checks that whether any user is logged in or not. If someone is logged in then we are allowing him or her to proceed with the internet banking. Otherwise it prompts the user to login.

The Figure 2 describes the flow diagram of Adding an User .While try to adding any user in the system it checks whether the person have required permission or not and validate credential and then enter information into the database.

The Figure 3 describes the flow diagram of loan apply and return process .While any user in the system applying for a loan it checks whether the person have required permission or not and then sanction the loan. Also initiate loan return process and check and update database until loan return process is completed.

The Figure 4 describes the flow diagram of investment suggestions to any user .

As the website is completely login-based, visitors have to register for being profited from the features of website. When the user logged in the site with valid credentials there are various options to perform. User has level specific login page i.e user interface page for every user depending on their level of registration in the database.They can also add other users in any downward level in a tree structure.

There is also option that an user can apply for a loan from the respective branch.We have created an option apply loan in the page that will take the user to a page where loan request formalities will be filled up and a request ID will be generated and will check the immediate parents who can fulfill the request.

There may be possibility that one parent cannot fulfill the whole requested amount.So then the rest of requested amount will be checked with the parent id of the child who just sanctioned the previous amount .Thus the whole system will provide service based on tree structure.

This system will also calculate the portions of profit or loss of the parent IDs depending on their sanction percentage. There is also a target calculation page for every member of the branch that they have to fulfill.This action has been done to make it a profit based organization.If anyone fails to fulfill the targeted amount on a particular year, the system internally calculate it and lowers the targeted amount.

There is also an option investment.Before investing any user can choose options he/she interested in and compare the profits for a certain period of time.

In the backend of the system it take datas like user’s monthly account balance, credit card balance and payment and suggest the profitable one with the help of artificial intelligence. Here we have used data mining process to get data from various tables and made some intelligent decisions to set some differences with the existing web based user friendly financial sector platforms.

Table 1: The matrix to store relational database.

id	level	parent_id
2	3	1
3	3	1
8	1	7
1	4	null
4	2	2
5	2	2
6	2	3
7	2	3
9	1	7

Now, from this table we can get exact parent child combination of every level in the particular organization .So we can handle the whole lending process of the bank in a better way .Also we can design level specific webpages based on the data fetched from this table.

C. Databases:

MySQL is the most popular Open Source Relational SQL database management system. We have used MySQL for storing and retrieving all the database information both conveniently and efficiently. In a database forum we have used several tables for different operation. Following are the tables:-

1. Table registration – Used for storing the details of the customer. As the data is fetched we store it with a particular id. This table has attributes, like-

- i) id (varchar)
- ii) fname (varchar).
- iii)lname(varchar)
- iv) emaild(varchar)
- v) password(varchar)

2. Table structure – Used for storing the relational details of customers. This table has attributes, like-

- i) id (varchar)
- ii)level (varchar).
- iii)parent_id(varchar)

3. Table loan_req – Used for storing the data of customer’s loan details. These table has attributes, like-

- i) id (varchar)
- ii) loan_id (varchar).
- iii)loan_amt (varchar)

3. Tableid_tar – Used for storing the data of agent’s target deatils. This table has attributes, like-

- i) id (varchar)
- ii) amount (varchar).

4. Tableid_curtar – Used for storing the data of agent’s current target deatils. This table has attributes, like-

- i) id (varchar)
- ii) curamount (varchar).

5. Tableshare_loanamt – Used for storing the data of agent’s sharing deatils. This table has attributes, like-

- i) id (varchar)
- ii) share_amt (varchar)
- iii) loan_id(varchar)

6. Tablepolicy_details – Used for storing various policy details to give best suggestions to their customers. This table has attributes, like-

- i) policy_id (varchar)
- ii) amt (varchar).
- iii) time (varchar)
- iv) interest (varchar)

Here a varchar represents a string.

IV. IV. Results

Here goes some of the web pages of our development, which shows the recommendation and various other features. The Figure 4 is showing the Home Page of our system.

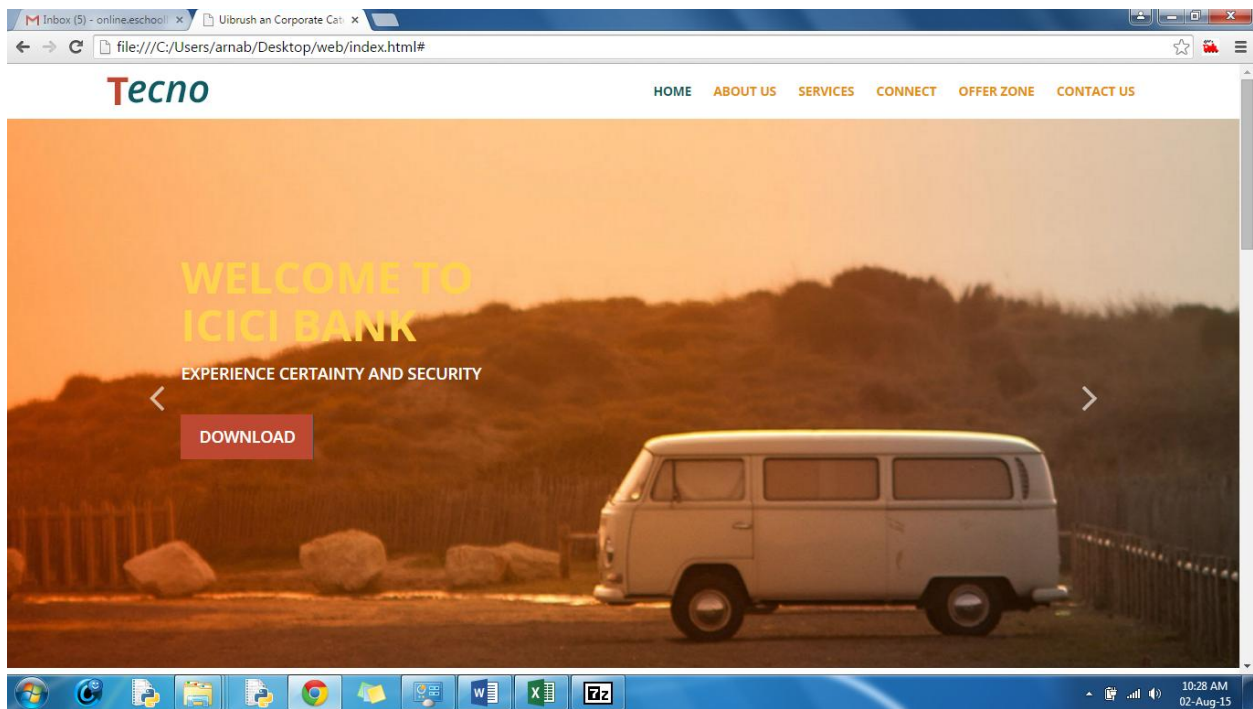


Fig. 4 – Home page of our project

V. Future Work

We will work on this later and we will emphasize on the security of the system. We will use cryptographic algorithms like Hashing, Private Key Encryption intensively to make the system more secure and protect this from serious threats. Moreover, we will work on the Recommender System to make it more efficient.

VI. Conclusion

The methodology section describes the implementation of the system in detail and the result section shows that the system is working as per our expectation.