

Insurance Customer Authentication Using SVM and Financial Time Series Analysis for Mobile Applications

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Received September 04, 2020; Accepted November 10, 2020

ISSN: 1735-188X

DOI: 10.14704/WEB/V17I2/WEB17079

Abstract

Insurance industry facilitates the users to access the information easily in their jobs without the repetition of password and remember the multiple passwords. Current technology attracts the insurers in authentication process. The identity authentication processes requires the customers to jump through the many hoops, which construct an unpleasant customer experience. The proposed method reduces the challenges in insurance business data using the classification algorithms using the support vector machine (SVM) for the mobile Applications since the growing trend in mobile apps will make it easy for the users. A seasonal variations and correlation in this financial time series data using statistical methods and ultimately generate trading signals for the insurance data. The feature extraction process increases the user security. The classification process improves different level of user identity. The support vector machine increases the data validation process quickly. Finally the proposed work enhances the user authentication process. The frame work is implemented using the matlabR2014 software and results were simulated for mobile apps.

Keywords

Insurance, Password, Support Vector Machine, Authentication, Statistical.

Introduction

Several insurance industries take the identity authentication process in the next level by the leveraging KYC (know your customer). Particularly, KYC be the part of business process involves the verification of clients. There exist the potential risks between the insurance among the several industries in identity authentication process to the next level with the leveraging KYC. The KYC be one of the processing steps in the business, which verifies the identity for the clients and assess the potential risks. Several insurance companies keep on changing the rules and regulations for processing the data. There exist lost of threat associated with the insurance industry. The purpose of getting the critical data of customer in the insurance industry with several attacks such as the cyber attacks, hacker attacks, network intrusion etc. For example mini orange is the best company to protect the customer's sensitive data with help of the strong authentication product. The processing step involved in the company is identity and management solutions, which eliminate the factors such as the age old with "sticky approach" in terms of identity approach management for the different login ID's and their passwords for the employees in accessing the applications. In these applications required only one set of login for processing. The identify authentication process leaves the way for variety of technologies [1]. The technologies include the Artificial Intelligence (AI), block chain process, image analytics and the machine learning and the other related two tasks. The first task is ID verification and other one is identity authentication.

The ID verification tasks be the interdependent nature of the cyber security, where the security step involves one entry state in the eco- system. The second step becomes the recent advancement in the Internet measurement with the machine learning techniques, which able to perform the accurate assessment over the quantitative method in the security in the firm level. The pre-screening level of the security allows the insurer in advance way for the updating profile opportunity in their working level of insure among risk at various level [2]. The literature shows the powerful security economics is under the experimental research level. The business field also searches for the security in the cyber insurer. The major efforts in analyses for effective insurer's assessments in adverse selection problem [3]. The Disability Determination Services disagree with the agencies with the Social Security Administration (SSA) standards and the state with the political interests attracts the demand for disability insure with low skilled employment during the period for the year (1982-2013).The variation in training and the practices increases the steps in the determination process. The decision taken about the constitutes disability requires for the new policies and an individual judgment with the disability applications [4].The new policy has the working limitations for the employment in the training process for the

system. The employment rate for the people in the working limitation increases the time complexity in accessing the system [5]. The resultant factor increases the fraction access of ID recipients and denied applications, which decreases the employment rates for all the applications groups. The work extends the change of the system to limit the disclosure percentage. The system change extends the correlation in weights reduces the role of expansion for the Social Security Disability Insurance Program (DI) in explanations the observations employment declines. So the insurance industry manages the risks and recent insurance company data demonstrate the cyber security in the biggest way. Legal and regulatory risks for the data break manages the customer retain, maintain profitability and protect executive careers. The proposed method uses a classifier technique for the classification of data using machine learning. A session 2 discusses about the literature survey and the session 3 discusses about the feature extraction used for the validating the customer. The session 4 discusses about the financial series analysis and follows the conclusion.

Literature Survey

The literature survey covers the employee and customer retention for the insurance users. An author Yapeng Zhu et al., [6] policy entrepreneur discusses about the theory and analysis for an innovation process in the Chinese local government with the special concentration on the key manager interaction steps in the innovation process. The investigation study helps the organization growth and development in administration resources. Some factors such as the technical expertise, investigation for construct policy agent and their idea about the investment such as the stakeholders, local leaders, marketing and fostering political achievements. An existing work lags in the technical expertise, which affects the user verification process. The proposed work uses the feature extraction facility to validate the important factor for the system. The lower level policies with their corresponding outcomes discussed by the Jiajian Chen et al., [7] where the cause of passive implementation and the movement of low level policies in the local contexts and changes in the pressure for the security system in the implementation. The fluctuation in the policy implementation normally accumulates the social conflicts and the government problems. The level of problems and the pressure of implantation might vary from the low to high policy risk in implementation process. The verification in the implantation mechanism using the policy implant and the worker government, which lags in the validation of user details. The proposed wok uses the classification process for the customer details related with the property for the users. The economic status were examined by the author Chiara Perillo et al., [8] in the financial sectors relates the policy, macro- economic variables and financial exposures. These exposures consider the account

with interactions between the real and the financial sectors are interconnected. The existing system lags with the financial analysis, but our proposed work enhances the overall year wise analysis using financial time series analysis application provided in the Matlab software. Economical factors discussed about the Maria Victoria et al., [9] with the current stage for Latin American and the Caribbean LAC's demographic with the epidemiological move. The health policy agent makes straight way connection with the region in terms of the transition in policy and health policy frontier. The number of policy with stand for the particular policy holder can be classified properly. The proposed work classifies accurately using the support vector machine classifier. The policy terms and the medical terms relationship with each other by the author Knut Røed et al., [10] proposed a cost benefits analysis with the bound near the negative results, where the programmers involves the full time work with the reasonable assessment in the period of participation with some value. In the situation the insurance company need to update the data security in the enterprise level be the best solution with the challenges in complication and constrains with the security break. In the existing system the main drawbacks are the long term disability insurance program with the unemployment and lags security in unauthorized user. These draw backs can be overcome using the restriction for the accessing the user name password for the user. The new designed frame works enhances the various levels of authentication to access the user name and password for the customer. The proposed system increases the security in the system using the machine learning techniques and the long term insures analysed using the financial time series method. The proposed model increases the employee authentication.

System Model

The insurance data set contains the related information such as the claims severity and frequency modeling. The method helps in testing new regression problems such as the non-linear mixing models etc. When using the proposed model increases the high security for the customer data protection and the unauthorized user. The reason for the insurance company not only needs the single sign and also the strong authentication for the security purpose. The customer authentication using the machine learning algorithm as shown in figure 1.

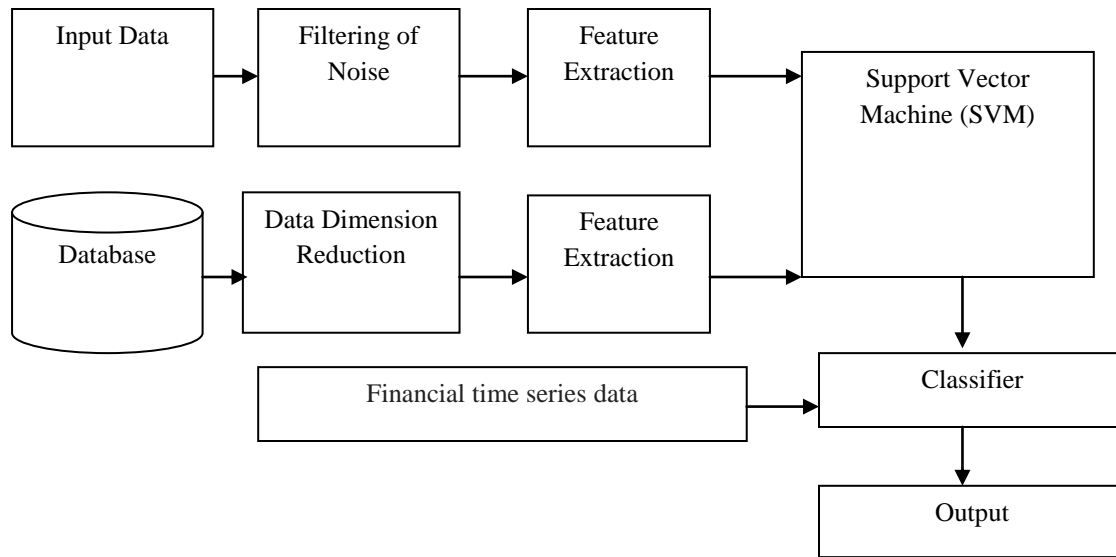


Figure 1 System model for the customer authentication

The processing steps are shown below.

Input Data

The classification process is the technique to categorize the input data into a desired and the distinct number of classes. These classes may assign the label to the each class of data such as the Male and Female. The users in the dataset needs the three steps in the process. The first step uses the importing data. Here the creation of dataset with the instance records of data. The second step involves the creation of iteration. When the created dataset makes use of the instance iteration through the dataset. The data set with the user details were feed to the proposed method[11]. There are different stages present in the proposed method involves the filtering of noisy data such as the missing data and incomplete data, feature extraction and the machine learning techniques using the support vector machine(SVM). The next steps follows the filtering of noise.

Filtering of Noise

This step extracts the noisy data to recognize the non- standard missing values in the summarization process and the transformation for the missing values. The missing values to be replaced by the standard format by following the below steps.

Steps:

- Loop through the OWN_OCCUPIED column
- Try and turn the entry into an integer
- If the entry can be changed into an integer, enter a missing value
- If the number can't be an integer, we know it's a string, so keep going to loop count.

Feature Extraction

The feature extraction processes the variables as the features as customer_ID customer_Gender customer_Age customer_YearofJoining customer_Month_Joining customer_Day customer_salary.

Support Vector Machine

The machine learning method uses the support vector machine type, where the supervised learning models with the associated learning algorithm makes the data analyze results in the classification and regression analysis. This method is most used in the classification problems. The SVM algorithm uses each data plot in terms of n dimensional space. Where n be the number of feature with the value for each feature begins with the particular coordination. The next steps follows the classification process using the hyper plane with the differentiate with the two classes [12]. When the customer applies the home loan, the company validates the customer's eligibility for a loan. The company wants an automated loan eligibility process (real time) based on the customer details provided using the online application form. The details such as the Gender, Marital Status, Education, Number of dependents, Insurance, Income, loan amount and other factors. An automation of the process gives the problems to identify the customers segments were eligible for a loan amount can specifically target these customers with their partial dataset. The SVM regression model uses the svm fitness model with the input of x and y be the claim details. The most common syntax is:

```
SVMModel = fitcsvm(X,Y,'KernelFunction','rbf',...  
'Standardize',true,'ClassNames',{'negClass','posClass'});
```

The x- be the matrix of predictor data from the data set in the rows and columns. The y be the class labels of customer id, data of joining and other related details. The values are specified in terms of the integer values. The characteristics of Gaussian method select the default values for one class learning and specify the use of radial basis kernel function. The important steps for the train the SVM classifier with the proper kernel function. The flag indicates the status of the training method in the classifier. The positive, negative classes specify the performance of classifier. The proposed method allocates the optimized parameters for the SVM algorithm enable to classify the data.

Financial Time Series

The method used for the financial time series application which enables the managerial activity for the time series analysis using the fitness function objectives. The three field

used in the method such as the Desc be the description field, Freq indicates the frequency indicator field relates the frequency updated details with the period of data function (Dates). The series of data to analyze consider under the customer details in the dataset. Generally the method used in the Financial Times Series application with the sub functions of Acquire data, Create a variable and Convert the variable to fitness function. In MATLAB uses the Data feed Toolbox software. This application helps to change the characteristics of time series object, including with other financial time series prediction of data [14],[15],[16] and [17].

Result Analysis

Dataset Description

Knoema is the most comprehensive source of global decision-making data in the world. Our tools allow individuals and organizations to discover, visualize, model, and present their data and the world's data to facilitate better decisions and better outcomes. Data Bulletin : Latest releases of new datasets and data updates from different sources around the world <https://knoema.com/atlas/topics/Insurance/datasets>.

Output In message Box

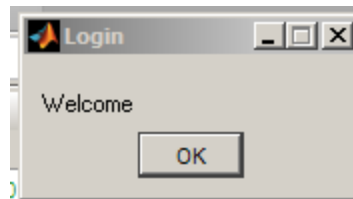


Figure 4.1 Login Message

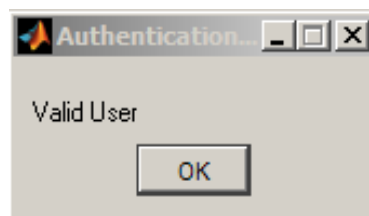


Figure 4.2 Customer validation

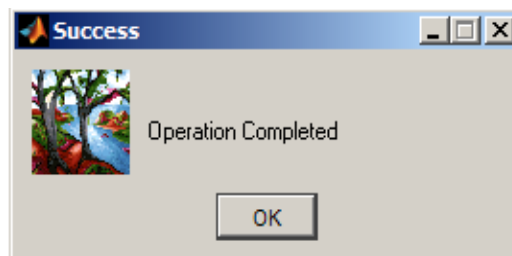


Figure 4.3 Completion of processes

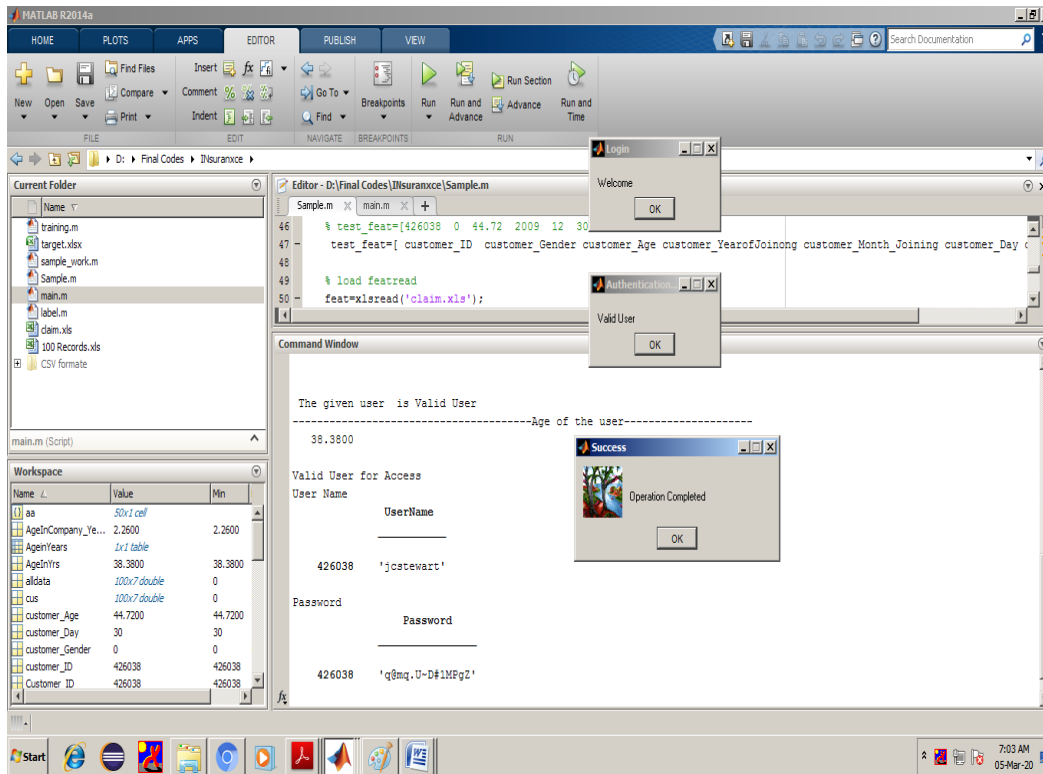


Figure 4.4 Screen shot for the customer authentication result

The figure 4.4 shows the customer authentication output result as the screen shots with the user login, validation of user and process completion.

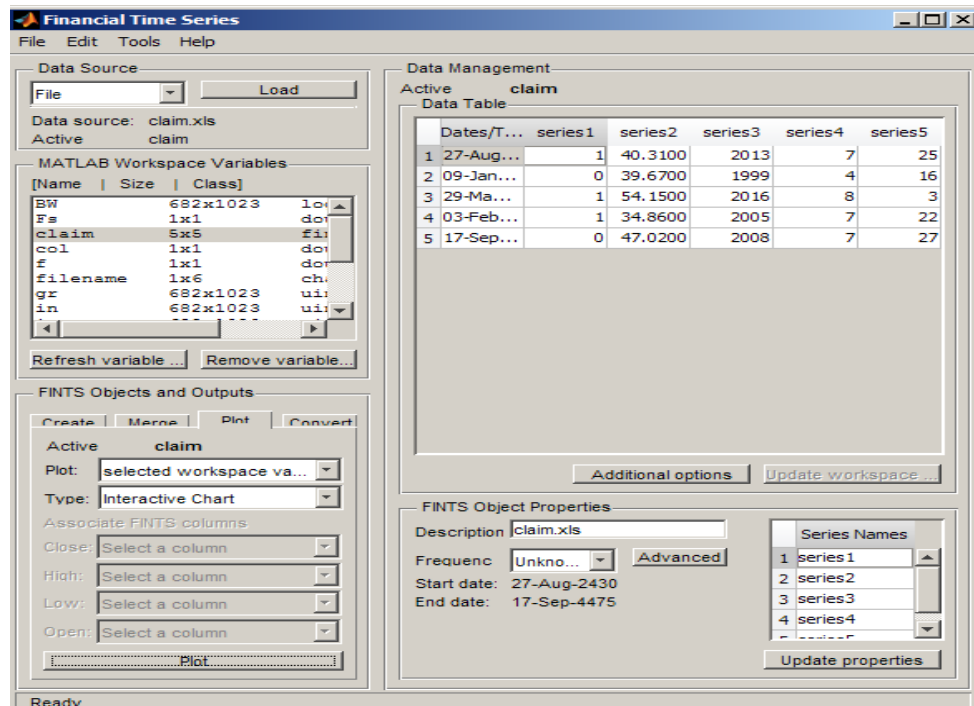


Figure 4.5 Financial times serial format

The figure 4.5 shows the financial times serial format shows the window with the data series with the claim recognition and the tool gives more analysis for the 3D plot. The data management which gives the details about the active column and the data series.

Table 1 Sample output

Sl.No.	Insurance_ID	Name	Gender	Age In Yrs	Year Of Joining	User Name	Password
1.	426038	'Stewart'	F	44.72	2009	'jcstewart'	'q@mq.U~D#1MPgZ'
2.	301576	Watson	M	21.1	2017	wgwatson	wM4J{]&j\~eGc
3.	622406	Lewis	M	49.85	1998	tqlewis	y;OJd_Oa#4g! G

The table 1 shows the output for the various employees using the system with their user name and password as the output. The designed system gives the output of the name, age after joining and the year as the output of validation customer. Finally the system gives the output as the user name and password.



Figure 4.6 Overall customer data analysis

The figure 4.6 shows the insurance data analysis for the period of August, May, January and September month of customer opening of the year. There may be the deviation

occurred for the May month in the analysis. The customer inflow and outflow predicted more in the month of May.

Table 2 Comparison of existing system and proposed system performance

Time/request	1	2	3	4	5
Existing System	100	150	152	160	180
Proposed System	100	250	300	320	500

The table 2 shows the processing the user request for both the existing and proposed system. Based on the timing the user request process is listed in the table. The graphical representation is shown in below figure.

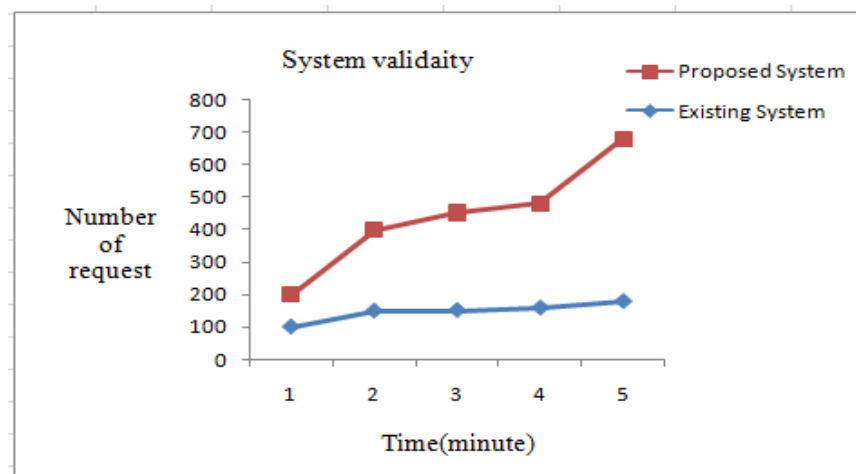


Figure 4.7 System validity for the existing and proposed work

The figure 4.7 shows the system validity for the both the existing work and the present work. The particular time limit for 5 min, the existing system process the number of request process up to the 200 request. The proposed work increases the increases the system processing up to 500 request per time. Hence the proposed work increases the system performance. When comparing with the ref[18] the user authentication increases in the proposed work with 25% with the existing system.

Conclusion

The proposed method involves the feature extraction steps to balance data distribution in the data set involves the business security details. The user details verification and authentication done using the support vector machine increases the safety data processing. The feature extraction process helps in validating the process using the output of the classification process. After verification and the authentication process the customer able to access their own user name and password. Finally financial time series analysis helps in

predicting the insurance period for the whole year present in the dataset. The proposed method increases the efficiency of the system. In future the work is extends to the classification process for the customer validation.

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