Artificial Intelligence Fraud Detection Using Genetic Algorithm

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ABSTRACT:

With an increase usage of credit cards for online purchases as well as regular purchases, causes a credit card fraud. In the mode of electronic payment system, fraud transactions are rising on the regular basis. The Modern techniques based on the Data Mining, Genetic Programming etc. has used in detecting fraudulent transactions. The technique of finding optimal solution for the problem and implicitly generate the results using genetic algorithm. The aim is to develop a method of generating test data and to detect fraudulent transaction with this algorithm. This algorithm is an optimization technique and evolutionary search based on the principles of genetic and natural selection, heuristic used to solve high complexity computational problems. This paper presents to find the detection of credit card fraud mechanism and examines the result based on the principles of this algorithm. The benefit of detecting fraud is to clear for both credit card companies and their clients. The fraudulent transactions are not prevented from being cleared; the company must accept the financial cost of that transaction. This reduces the cost associated with higher interest rates, and its charges.

1. INTRODUCTION:

The traditional technique for identification of fraud detections in transactions using data Mining algorithms. So many data mining techniques are available. But using data mining concepts not possible to get efficient results because of classification problems in data mining. So, by using genetic algorithm in artificial intelligence identify the fraud transactions in banking sector like identification of credit card fraud transactions is efficient [2].

In genetic algorithm operations starts with population generation of chromosomes of dataset. After population generation perform operations like selection in genetic algorithm. After selection perform cross over operation. After cross over perform mutation operation in genetic algorithm. By using cross over and mutation operations generate new population and perform number of iterations and identify the best new population values. If number of iterations is more efficiency of fraud result is high. If more iterations in population generation get more accurate fraud detection output results in genetic algorithm

2. PROPOSED SYSTEM:

Proposed system using artificial intelligence techniques.In this artificial intelligence for fraud detections using genetic algorithm for more accuracy. In this genetic algorithm first step is to calculate initial population [2].
After iterate this process up to reach of termination criteria. In this iteration after population generation calculate fitness value. Based on fitness select the best population generations.After selection cross over the

populations and re combination of populations in mutation operation [2].

In mutation operation chance of possibility to get best detection result because in this based on critical value classify the transactions and provide best fraud detection output in particular critical value transactions. In this genetic algorithm perform more number of iterations and finally generate new population called best solution based on critical value [2].

3. ARTIFICIAL INTELLIGENCE IN GENETIC ALGORITHM:

In Artificial Intelligence in genetic algorithm have generally used following applications like quality optimization of video and audio sound systems applications, telecommunication department like routing of communication systems. In DNA testing and analysis of DNA using genetic algorithm.Robotics and analysis of neural networks also using genetic algorithm.In traffic analysis of network applications also using genetic algorithm [11].

In fraud detection genetic algorithm have generally following process like generation of initial process for sample input data and generate random populations. After that calculate the fitness value for each population of each chromosome and validate that it is correct or not like sorting of all transaction based on fitness value. After that genetic algorithm perform 3 operations like selection, mutation and crossover of transaction data [11].

In selection operation perform selection of 2 parent chromosomes like following torments selection method in this selection operation. After that perform cross over in this cross observation of above selected 2 chromosomes and generate the new generation population based on above 2 chromosomes. After that perform mutation operation in this operation calculate the probability of selected chromosomes like identify the uniform probabilities values of chromosomes. After mutation perform best selection operation in this operation identify the best perform elitism method and get best result and again repeat under reaching of maximum number of generations. This is called common functionality and flow of genetic algorithm in Artificial Intelligence [3].

By using genetic algorithm analysis of data is high accurate because in genetic algorithm perform number of iterations if number of iterations are high accuracy is high because so many times we are analyzing the data using genetic algorithm like filter the data by using more iterations so that's why genetic algorithm gives more accurate results then compared with other data mining algorithms [3].

In genetic algorithm different types of terminologies are there like populations. Chromosomes, gene and allele. In this population means every possible solution is called population in genetic algorithm. Chromosomes mean best solution for problem is called chromosome in genetic algorithm. Gene represents the location or position of solution called chromosome. Allele is data for gene taking of particular solution like chromosome [3].

Genetic algorithm follows the biological analysis internally and it is used resolve the different data analysis problems. By using

genetic algorithm generate all possible ways of solutions to problem. Select the best solution based on fitness calculation of solution like by using that solution again reproduce the new solutions. By using genetic algorithm, we will get best solution finally to resolve the issue. So that's why genetic algorithms are mainly used in circuit designs and robotics designs and automatic engine systems manufacturing and testing of machines use genetic algorithm. By using genetic algorithm identify the faults in robots like robots working functionality and automatic engines functionality all are tested by using genetic algorithm

4. IMPLEMENTATION:

Proposed project implementation contains some modules. Generally, this implemented project is divided into 3 modules [2].

4.1 MODULES:

Proposed project implementation has total 3 modules. They are GUI user interface, Genetic algorithm implementation and fraud detection analysis [3].

4.2 MODULE DESCRIPTION:

4.2.1 GUI User Interface Module:
This GUI user interface module is implemented by using Java foundation classes in javax.swing package. In this using AWT and swing components develop GUI [5].
This implemented GUI has components like text field, text areas and buttons. By using event actions develop the action events for buttons in User interface[4].

4.2.2 GENETIC ALGORITHM MODULE:

This module has total genetic algorithm implementation. In this module implement genetic algorithm in java code. Implemented initial population generation initially after that calculates fitness value [2]. Based on fitness value filter the populations and until satisfy of termination condition iterate the generations and using cross over and mutation operations combine the populations [2]. Finally generate new population. Based on critical value identify the fraud transaction details in credit card input data transactions [3].

4.2.3 FRAUD DETECTION ANALYSIS MODULE:
In fraud detection analysis is implemented in 3 types. One is normal detection using data classification method and another is monitor able fraud detection. Third method is using genetic algorithm identify the fraud detection. Using genetic algorithm identify fraud transactions have provide best efficient and accurate fraud details [4]. If using detection does not provide efficient result and may be possible to get false fraud detection result also [5]. In this fraud detection analysis, we identified genetic algorithm provide best deduction solutions in artificial intelligence [2].
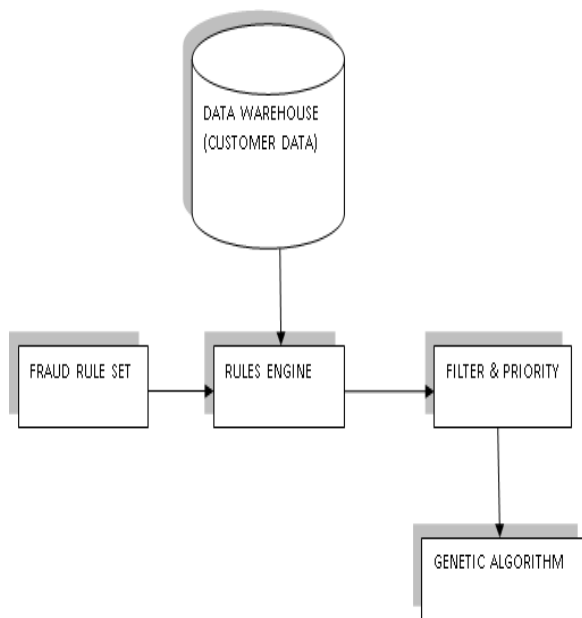
5. SYSTEM ARCHITECTURE:

Fig 3.1: System Architecture

5.1 PROJECT SCOPE:

Scope-In

This implemented tool has desktop based Graphical user interface representation. It is a standalone type format. It is not supported to web browsers [5].
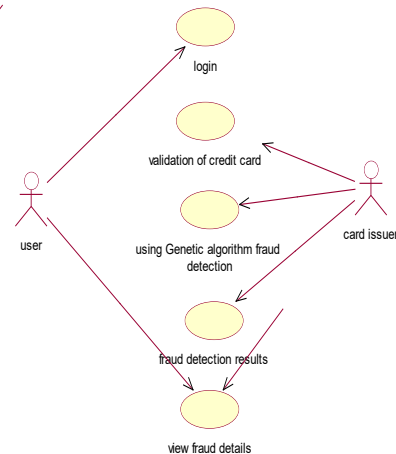
Scope-Out

Stat this tool. After start of tool using browse button apply input dataset of credit card transactions. After that click on find button display the fraud transaction details in bottom result panel. In this display the dataset details and critical value for populations. Finally display the fraud transactions using genetic algorithm and display the normal and monitor able transaction details also in result panel [5].
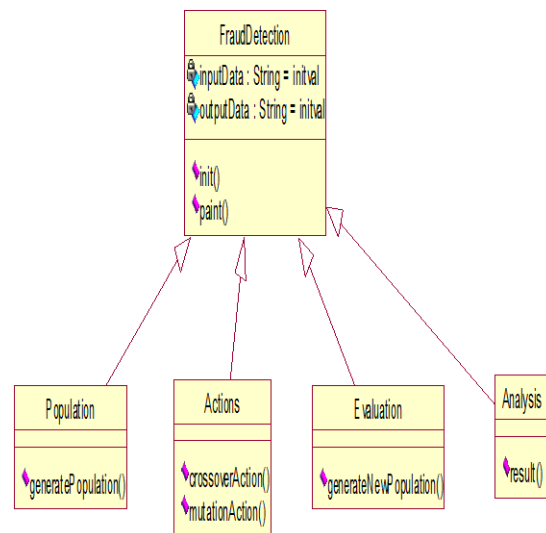
5.2 UML DIAGRAMS:

System design has different diagrams representation of implemented system. In this using UML diagrams display the implemented system in design format. Based on system design developers start the development of application [1].
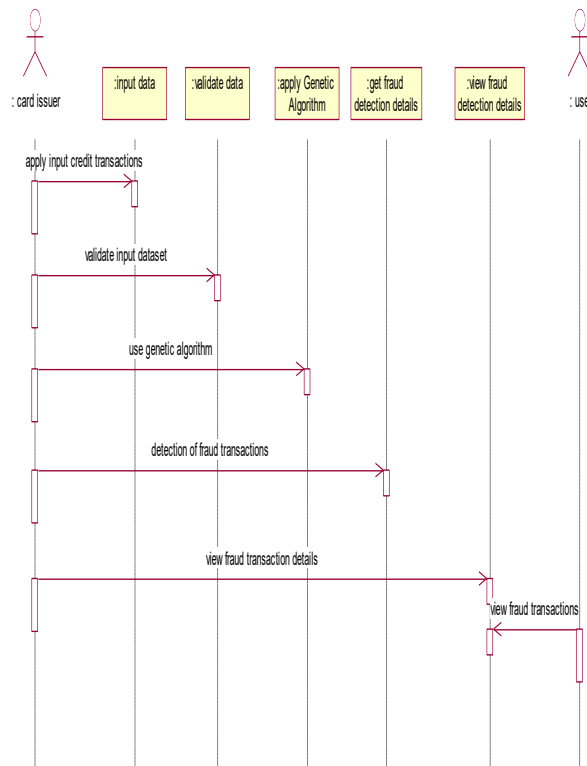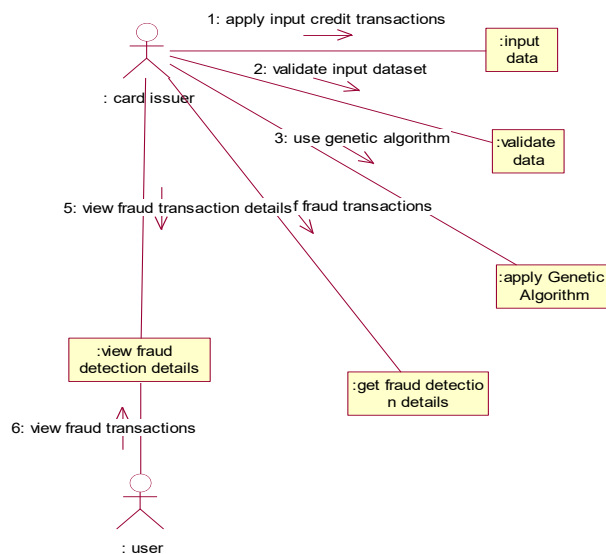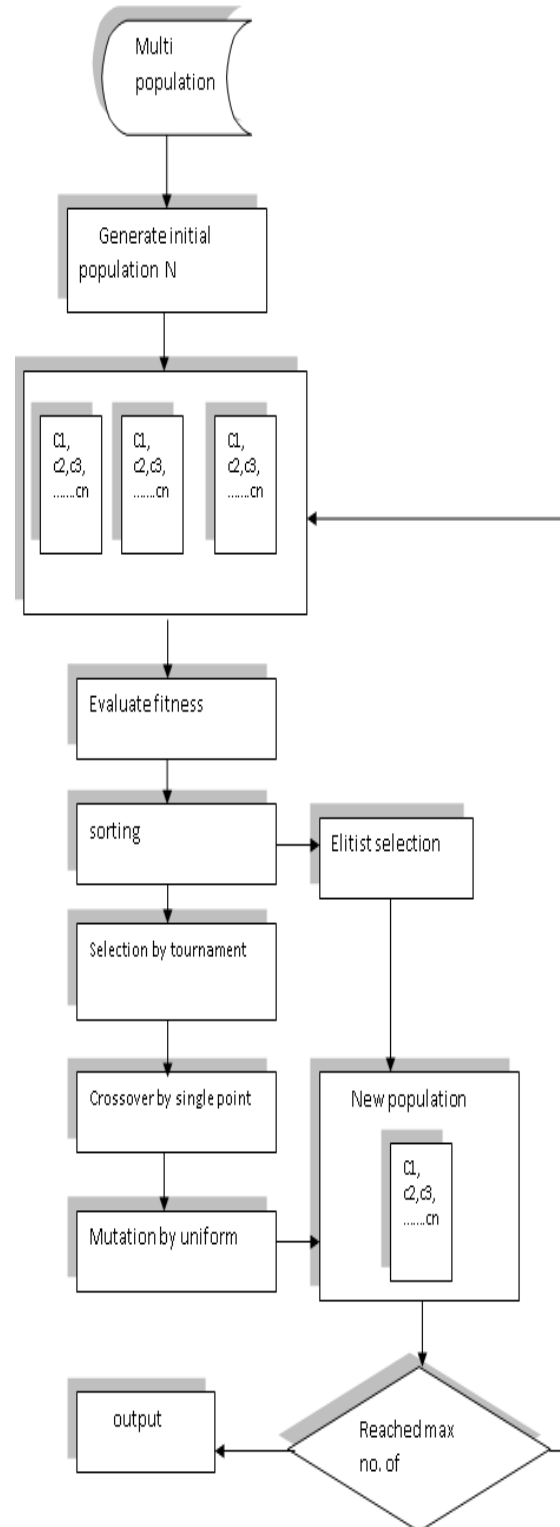
Use case Diagram:

5.3 CLASS DIAGRAM:

5.4 SEQUENCE DIAGRAM:

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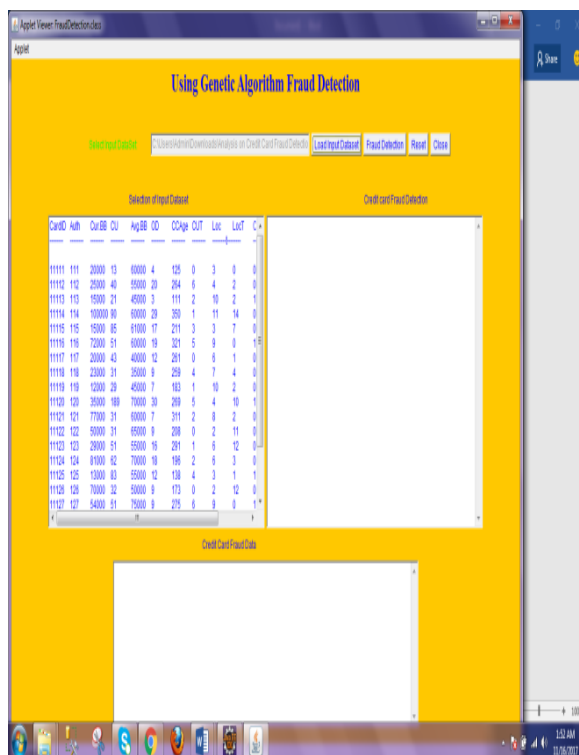Volume 04 Issue-17
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5.6 DATA FLOW DIAGRAM

5.5 COLLABORATION DIAGRAM:

6. RESULTS

EXPERIMENTAL RESULTS:

Present implemented system has executed and displays the following results. Load data set

In future enhancement using more artificial intelligence techniques to detect fraud transactions in banking sectors.

7. CONCLUSION:

This credit card fraud detection implemented system have efficient results because in this using genetic algorithm in artificial intelligence. In this implemented system genetic algorithm provides accurate fraud detection results.

8. FUTURE ENHANCEMENTS:

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