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Improvement of Clustering Mechanism using SVM and PSO in Reinforcement Learning

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Abstract: ***Here the implementation of clustering mechanism has been proposed using SVM and PSO in reinforcement learning. The proposed work consists of implementation of Support vector machine with integration of PSO for poker. On other side the implementation of genetic algorithm would be performed with integration of Support vector machine. The research work also proposed the comparative analysis of performance of PSO and genetic algorithm in poker system. It also provides the implementation of Genetic Algorithm. In order to develop more efficient particle based implementation with integration of vector machine in poker is a challenging process.***
Keyword: Reinforcement learning, Neural Network, PSO, SVM, Fuzzy logic, Deep Learning.

I. INTRODUCTION

Artificial intelligence is field which is associated with science. Its main objective is to resolve the multifaceted matters with the help of machine. It works in the same way as done by person. To achieve this, we first adopt the features of persons. After that we implemented it as a formula in a computer responsive technique. Computers are basically compatible to bring out mechanical calculation. Flat program rules are utilized by them to do this function. It allows artificial machine to carry out uncomplicated repetitive responsibilities professionally and consistently. Human beings are not able to carry out this feat.

Fig 1.Artificial Intelligence

A. Usage of AI

AI has been prevailing in variety of areas which is as follows :

*1)*Gaming:-An important function in strategic games is played by AI. Chess, poker, tic-tac-toe, etc are the few examples of strategic games.

2) Expected Language Dispensation: - It is practicable to work simultaneously with computer which are skilled of recognize ordinary language spoken by humans.

3) Systems of Expert:- An skilled system is a processor course which is created to perform as a specialist in an exacting domain or we can say that in an area of expertise.

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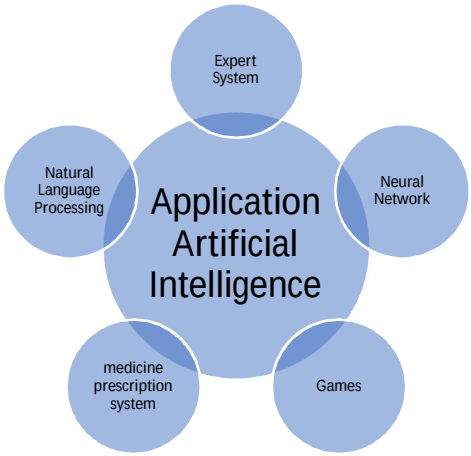

Fig 2 Applications Artificial Intelligence

B. Support Vector Machine

A Support Vector Machine is a supervised learning model. It contains learning algorithm. Information required for the purpose of organization and decay examination is survey by them. It is a machine learning approach. They analyze a large amount of data to identify patterns from them. Concept of finding a hyper plane is used as a base for the creation of SVM. It exploits for mathematical and engineering problems. For example handwriting number detection, item recognition, speaker discovery, faces classification in descriptions and target detection. In coding exercise it is observed by us that how the accuracy of SVM is improved by doing modification in these parameters.

C. Genetic Algorithms

These are the techniques required to resolve multifaceted problems. Encryption of variables in series is done for the operation of G.A. Encryption discreatizes the search space constantly for each function. On the other hand it comes in to notice that simply proper encryption of the difficulty can translate into a precise explanation. In GA, function value at isolated point is required. Therefore it is feasible to manage isolated along with irregular function. Relation between the string arrangements is detected by G.A. Therefore it is feasible to obtain the worldwide excellent explanation. GA is a people based investigation algorithm. Therefore it is feasible to gather multiple most favorable explanations. For the operation of GA knowledge of item function worth is more than sufficient.

II. OBJECTIVES

The objectives of research are as follow:

A. To develop efficient Particle Swarm Optimization approach for poker with integration of Support Vector Machine.
B. To check the performance of the Proposed Approach in poker.
C. To compare the performance of Existing Approach (Genetic Algorithm and Support Vector Machine) with the Proposed Approach for poker.

III. PROBLEM STATEMENT

Support Vector Machine has been considered as an effective classification mechanism that has been used in poker. It has been observed that there are lot of issues with Genetic Algorithm. Such mechanism is not capable to obtain the optimal feature subset. There are issues in local optimum while searching space is complex procedure. Particle Swarm optimization has been considered better global optimization ability. It has lower computing complexity as compare to GA or Hybrid GA. It is frequently utilized in order to perform selection of features. Due to these circumstances hybrid approach of particle Swarm Optimization with Support Vector Machine is required.

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IV. PROPOSED WORK

In the comparative analysis of performance in case of PSO would be compared with GA considering time complexity.
The proposed work consists of following steps

A. Implementation of basic SVM model using MATLAB.
B. Implementation of Genetic algorithm
C. Implementation of Particle swarm optimization
D. Perform integration of PSO with SVM and GA with SVM for poker.
E. Perform comparative analysis of performance of PSO and Genetic algorithm.

V. IMPLEMENTATION WORK

The proposed work consists of implementation of Support vector machine with integration of PSO for poker. On other side the implementation of genetic algorithm would be performed with integration

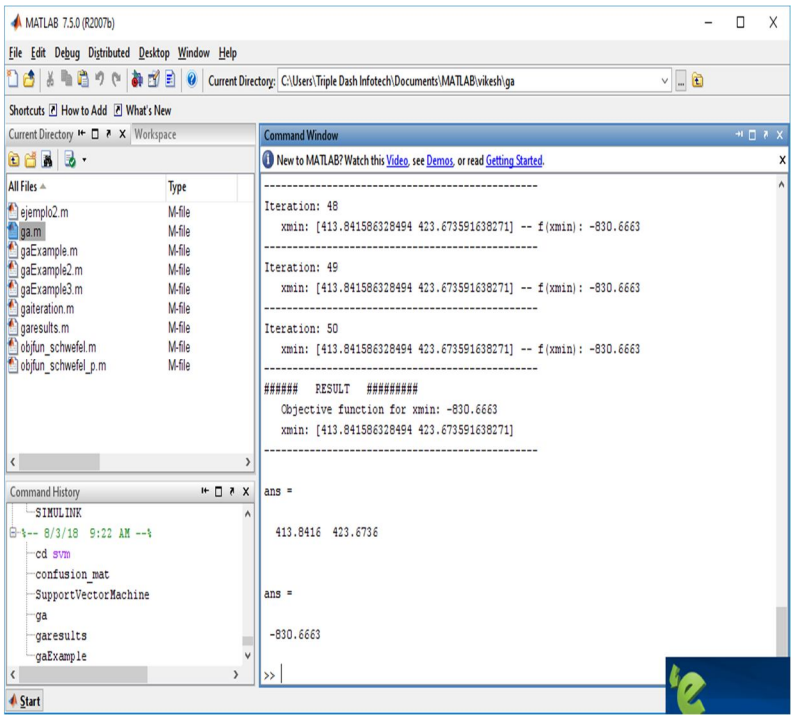

Fig 3. Implementation of Genetic Algorithm

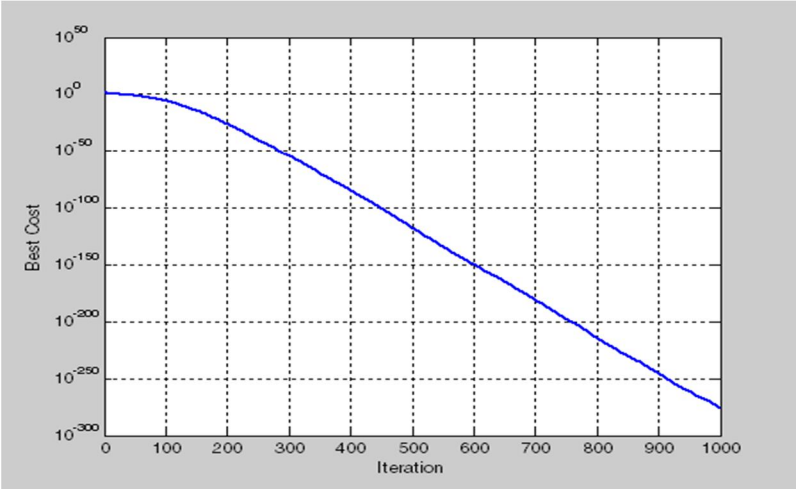

Fig 4 output of Best cost in case of SVM based PSO

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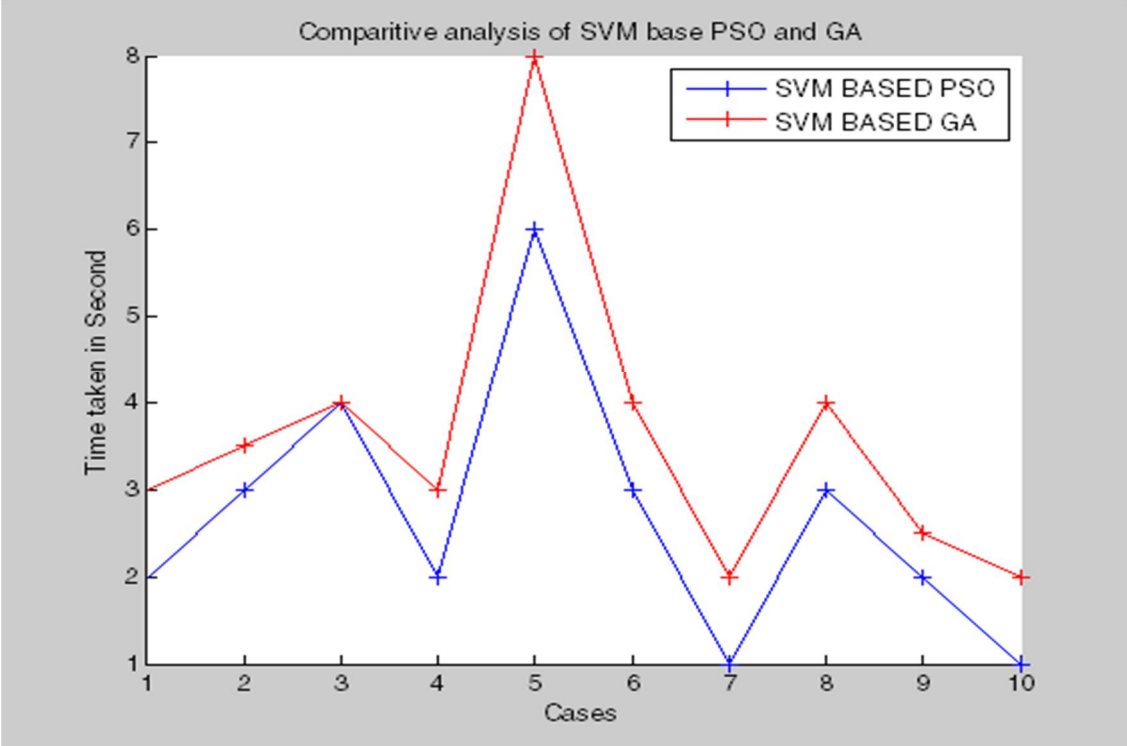
Table 1 Performance OF SVM Based PSO

Case	Time taken in case of SVM based PSO POKER SYSTEM (In second)	Time taken in case of SVM based GA POKER SYSTEM (In second)
1	2	3
2	3	3.5
3	4	4
4	2	3
5	6	8
6	3	4
7	1	2
8	3	4
9	2	2.5
10	1	2



5 .Fig Comparative analysis of SVM based PSO and SVM based GA in poker

VI. CONCLUSION

In conclusion it can be said that the performance of SVM based PSO is better than SVM based GA in POKER. The proposed work consists of implementation of Support vector machine with integration of PSO for poker. On other side the implementation of genetic algorithm would be performed with integration of Support vector machine. The research work also proposed the comparative analysis of performance of PSO and genetic algorithm in poker system. It also provides the implementation of Genetic Algorithm. In order to develop more efficient particle based implementation with integration of vector machine in poker is a challenging process. The blue curve represents the time taken by SVM based PSO and red curve represents SVM based GA. SVM based GA is taking more time as compare to SVM based PSO POKER SYSTEM. Thus it could be considered that the performance of SVM based PSO is better as compare to SVM based GA POKER SYSTEM.

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VII. FUTURE SCOPE

Support Vector Machine is considered supervised machine learning algorithm which is used for both classification and regression challenges. Swarm particle based implementation with such integration for poker could better perform in order to solve problems by having a population of candidate solutions, here dubbed particles, and moving these particles around in case of search-space according to simple mathematical formulae over the particle's position and velocity. In order to develop more efficient particle based implementation with integration of vector machine in poker is a challenging process.

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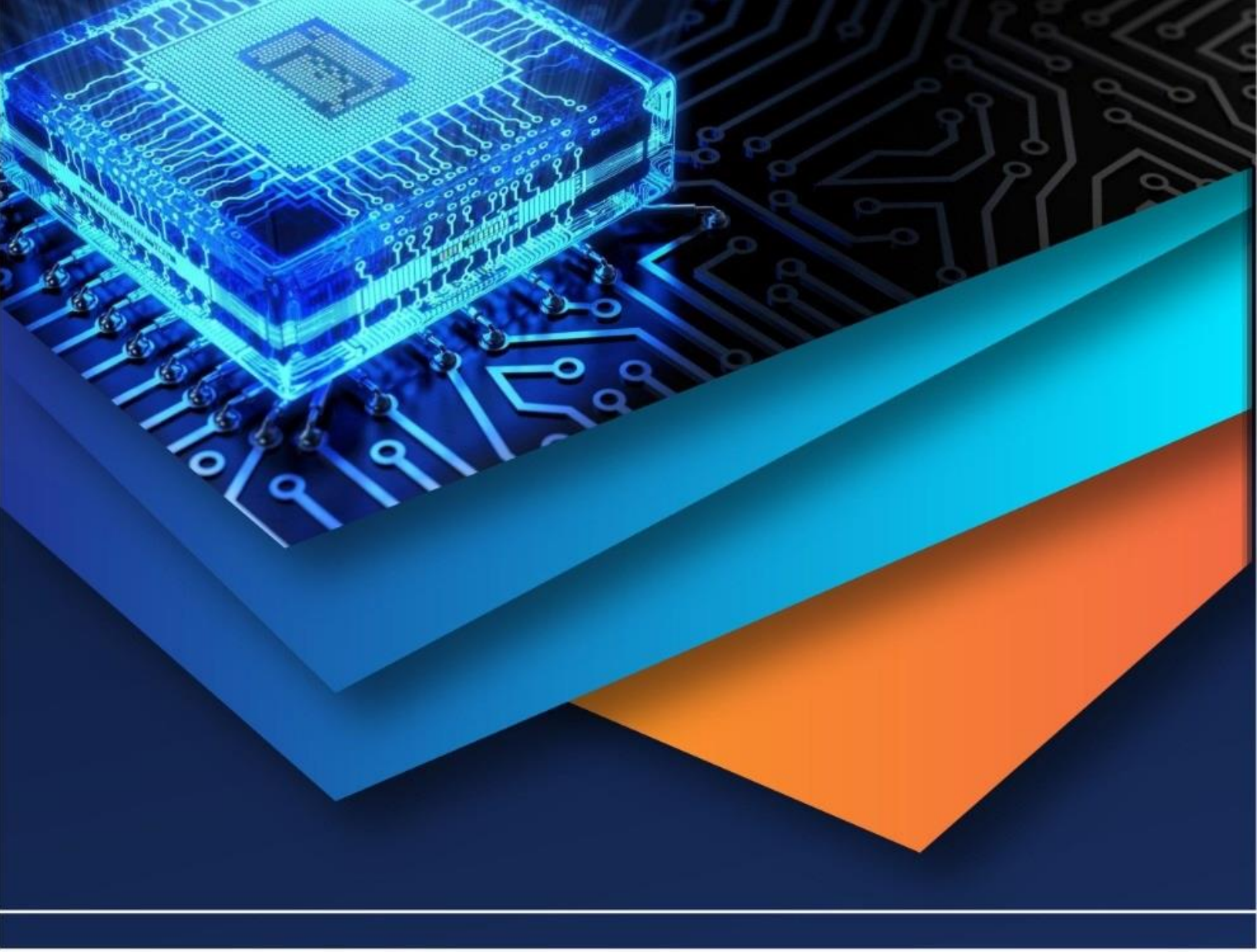

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