

ARTIFICIAL INTELLIGENCE APPLICATION USING SVM, GA AND PSO

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ABSTRACT: It has been observed that 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, the machines are made which includes the features of persons. The efficient Particle Swarm Optimization approach for poker has been discussed with integration of Support Vector Machine. The performance of the Proposed Approach in poker is also considered here. The paper also provides the compare the performance of Existing Approach (Genetic Algorithm and Support Vector Machine) with the Proposed Approach for poker. There are several researches in the field of AI in which some have been discussed in the paper. The research work would be beneficial to resolve the issues related to warm particle based implementation with such integration for poker.

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[1] INTRODUCTION

Artificial intelligence

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

All the researches which are related to artificial intelligence is highly practical and particular. One of the fundamental complications in artificial intelligence is that how computer programming has been done for some definite characteristic such as: understanding, analysis, Problem solving, awareness, education, Planning, Ability to manipulate and move objects. Knowledge engineering is considered as the fundamental part of AI research. Approaches involved arithmetic procedure, calculation

cleverness, and flexible calculation along with conventional representational AI. Some approach is exploited in AI, involved type exploration along with arithmetical growth methods which enlighten prospect along with financial matters

Usage of AI

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

- Gaming:-An important function in strategic games is played by AI. Chess, poker, tic-tac-toe, etc are the few examples of strategic games. In this it is thought that machine could perform a large no. of function on the basis of trial and error method.
- Expected Language Dispensation: - It is practicable to work simultaneously with computer which are skilled of recognize ordinary language spoken by humans.
- 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.

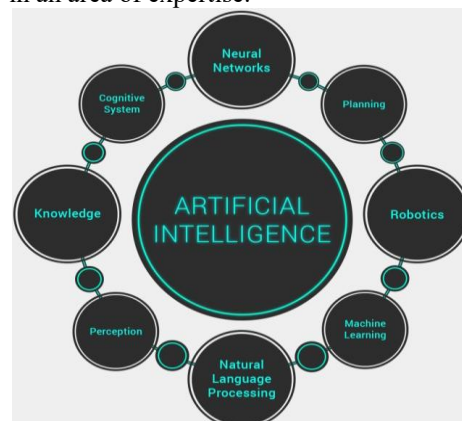


Fig 2 Applications Artificial Intelligence

- **Computer Vision Systems:-** With the help of vision the human beings generally detects the situation. We watch more often in comparison to listen, snuff along with sense. The main intention behind the investigation of computer vision system is to furnish computers with this influential skill. Due to this computers are capable of understanding their situation. In this the computer are assisted by the artificial intelligence so that they can recognize what they see through attached cameras. For Example

- The photographs take with the help of spying aeroplane can be utilized to disclose extraordinary information..

- In private clinic scientific expert system is utilized to analyze sufferer.

- **Language identification:** - The primary method of communication by human is verbal communication. The main objective of it is to authorize computers to recognize the human verbal communication. Due to this they are capable to listen our voice. After that they distinguish the language which is spoken by us.

- **Handwriting Recognition:-** Handwriting recognition is a software. They are capable of read alphabet printed on document or on screen. After classify the structure of the alphabet handwriting recognition software transform it into editable word.

- **Intelligent Robots:-** A robot is a electro mechanical device which is able to execute responsibilities given by a human. In other words we can say that it is a designed multipurpose manipulator which is capable of transport material, parts and tools. A variety of sensory devices are exist in an intelligent robot. With the help of these devices they take action as soon as environment undergo a change.

[2]FUNDAMENTAL THEOREM OF POKER

The basic principle of Poker is first presented by a famous poker theoretic DAVID Sklnsky in his book "The Theory Of Poker".. According to him this is this is the most comprehensive and generanized theorem with key to success in the game. Absolutely all your action at the poker table must be made considering these thought. This theorem is different fron all the other poker theorem. This is the only global theorem which is implemented to all the poker variation.. Despite of the fact that basic principle of Poker is straight forward it is the corner stone for all the poker winning players. The basic principle of Poker supposes all your actions in game must be made in order to achieve maximum expected value to win in the long run. It is noticed that it is possible to clearly expressed and detect the basic principle of Poker. An enormous amount of information, skillfulness and practice is required for its correct function in situation where poker player experience problems.

[3]LITERATURE REVIEW

There are several researches in the field of AI in which some have been discussed here:

Yiling Chen et al (2003) "An Introduction to Support Vector Machines", AI Magazine Volume 24 Number 2 (2003) [1]

It is expressed by Cristianini and Shawe Taylor in the introduction part of the book that their main objective is to propose a fundamental, unified introduction in the favour of vector machines (SVMs).

Durgesh k. et_al in 2009 presented data classification by employing Support Vector Machine",[2]

Foremost responsibilities which are carried out by different application is sorting. Text classification, tone identification, image sorting, micro-array gene expression, proteins structure predictions, data sorting etc are the example of these responsibilities.

Gidudu Anthony, Hulley Greg and Marwala Tshilidzi (2005) "Classification of Images Using Support Vector Machines"[3]

Support Vector Machines (SVMs)is comparatively fresh approach to observe the fuction of land cover for organization. Their source of generation are in spatial padalogy Theory.

D. Billings, et al (2006) "Approximating Game-Theoretic Optimal Strategies for Full-scale Poker" [4]

In this paper the author talks about the calculation of the 1st absolute approximations of game-theoretic best strategies for full scale poker. The game of 2-player is symbolize by the collective work of various though process. **Peter Bro Miltersen (2007) "A Near-Optimal Strategy for a Heads-Up No-Limit Texas**

Hold'em Poker Tournament"[5]

In this paper author investigate a heads-up no-limit Texas Holder poker tournament in the company of predetermined minute blind of 300 chips, predetermined large blind of 600 chips and a largely by sum of 8000 chips on the counter The heads-up endgame of sit-n-go tournaments on the well-liked Party- Poker.com online poker site is explained by these parameters.

Fabien Lauer et_al in the year 2008 presented a review Incorporating Prior Knowledge in Support Vector Machines for Classification [6]

In recent times support vector machines (SVMs) have been presented for organization and rapidly transform in to the state of the art.

Luís Filipe Teófilo et_al(2011) "Identifying Player's Strategies in No Limit Texas Hold'em Poker through the Analysis of Individual Moves"[7]

The advancement of competitive artificial Poker playing agents has proven to be a challenge. It is due to the fact that it is necessary for agents to handle the

inaccurate information and deception. **Wenkai Li et al (2013) “Estimating Winning Probability for Texas Hold'em Poker”[8]**

Calculation of winning probability is considered as the important concern in all the technology by which a good poker agent is produced. A method for the calculation of winning probability for Texas Holder poker is recommended by them in this article.

Himani Bhavsar, et al (2014) “An analysis on Support Vector Machine for Data Organization”[9]

The advantages of SVM in comparison to the available data examination techniques, is exposed in this paper. In addition to this several vital factors for data mining professional who wishes to employ support vector machines are also illustrated in this paper.

Jun Wang, et al tells how valuable characteristic are collected by means of Particle Swarm Optimization based on linear probing [10]

Author talks about fresh method by which, valuable characteristic are collected by means of Particle Swarm Optimization based on linear probing. From last few years, random probing rule has been employed for collection of valuable characteristic. It composed of excellent worldwide exploring talent.

Dian Palupi Rini, et-al Authors tall about the model ,consequencies and approach for Particle Swarm Optimization[11].

Some advantages and disadvantages are generated every time when an alteration is done in PSO. These advantages and disadvantages are illustrated in this article. After that a conclusion is produced from all those results.

Yuanning Liu, et al Authors has presented an superior Particle Swarm Optimization for collection of characteristic [12]

Four rules are originated by them in this article by presenting means of survival of the fittest, It imitates the contest in between swarms. By employing this method, customized Multi-Swarm PSO (MSPSO), is anticipated by them. It assist for solving discrete problems. **Li-Yeh Chuang et al presented a superior one dimension particle swarm optimization by employing catfish effect for collection of characteristic[13]**

A fresh optimization algorithm which is known as catfish one dimensional particle swarm optimization (CatfishBPSO) is presented by author. In this catfish phenomenon is employed in order to enhanced the working of one dimension particle swarm optimization (BPSO). Due to this new particles are developed into the search space (“catfish particles”).

Yi-Wei Chen et al presented complete assessment on use and objection of Support Vector Machine when employed for Data Mining Tasks: [14]

To figure out the various areas of SVM, by getting the knowledge of technique is the main objective of

this paper. After doing complete analysis, a simplified representation of the strength and size in both the hypothesis and use, is presented to researchers.

Feature Selection Strategies [15]

By incorporating support vector machines (SVM) and various characteristic collection rule, their performance is examined in this paper. It is found that Support Vector Machine (SVM) (Boser et al. 1992; Cortes and Vapnik 1995) is an valuable process for categorization. However it does not achieve vital characteristic. Combination of SVM by means of various characteristic collection rule is presented and their performance are examined.

K. Sutha et al presented an assessment of characteristic collection rule for Data Mining Techniques [16]

This paper Examination of a number of available popular feature selection algorithms is carried out in this article. After that strengths and challenges are described.

Jan enjoy Nayak, 8.1.2015, presented complete assessment on use and objection of Support Vector Machine when employed for Data Mining Tasks [17].

An assessment of the responsibility of system verification manage in a variety of data mining responsibilities like categorization, bundled, calculation, forecasting & others use is carried out by them in this article. To figure out the various areas of SVM, by getting the knowledge of technique is the main objective of this paper.

T.Miranda Lakshmi, 05.03.2013, An Analysis on Performance of Decision Tree rule by employing Student’s Qualitative Data [18].

One of the extensively used supervised classification technique is Decision Tree. For orientation of decision tree learning & organization procedure are easy & quick .It can be easily put to any domain. Information of students is extracted from the records of school or colleges

Durgesh K. Srivastava in the year 2005 put forward a method for organization of records by employing Support Vector Machine [19]

Foremost responsibilities which is carried out by different application is sorting. Text classification, tone identification, image sorting, micro-array gene expression, proteins structure predictions, data sorting etc are the example of these responsibilities.

Sanjeev Pippal, et al in the year 2014, presented a method by which record are extracted from social media to create a plan which is useful for business improvement [20].

A fresh proposal for the growth of business is Mining social media. A large quantity of user-generated data is contained by the social media. These records can be effectively employed for the extraction of records from social media. Trading

experts are look around various technique. Sales/marketing & advertising teams employing this extracted information to these technique. Social platforms consist of a rich source of information. Business policy of any business enterprise could be significantly affected because of this information. It is tried by them to enumerate & categorize such approaches with the help of different authors in this paper. In addition to this they also put forward that how this analysis & study of data mining approaches helps in understanding significance of social media mining. It was accomplished that for the creation of fresh business strategies social media mining is a fresh scheme.

Kristin P. Bennett presented a partially organized Support Vector Machines in the year 1998 [21]

A semi-supervised support vector machine (S3yM) method is established by them. In addition to this instruction set of labeled data & a operational method of unlabeled data is also presented. With the help of this training & working sets a support vector machine is fabricated by S3YM. S3YM is utilized by them for the resolution of transduction problem using overall risk minimization (ORM) posed by Cyanic. It compare in the company of standard inductive learning problem for determining the arrangement of function by means of each available values. After that by employing predetermined function to find out the sections of operational set data.

Rick Chow presented a professional design for collection of SVM-GA characteristic from huge healthcare records (2007) [22]

A professional design system for collection SVM-GA characteristic from huge healthcare records is put forward by the author. SVM & GA are vigorous calculation paradigms. Still collective recurring nature of a SVM-GA hybrid system makes operating costs impracticable in cases where large databases are employed. In order to minimize the dimension of dataset SVM training time and multi-resolution hierarchical clustering is used by this paper. Working is considerably minimized with the help of this approach.

Laura Diosan presented hereditarily planned Multiple-Kernels for increasing SVM achievements in the year 1995[23]

A single kernel is utilized in the traditional kernel-based classifiers. But the real-world applications insist that there is a requirement of a combination of kernels - also known as a multiple. Their main objective is to involuntarily discover statistical expression of a multiple kernel from the growing resources. A representation by the mixture of GP rule along with kernel-based Support Vector Machine (SVM) classifier is put forward by them in order to accomplish this function. DNA of every GP is a tree indoctrination geometric expression of a multiple kernel. It is demonstrate by the numerical

experiments that SVM embed- ding consist of multiple kernels doing well in comparison to standard kernels for considered classification problems.

Sheng Ding Feature Selection based F-score & Airspace Control Order Algorithm in Support Vector Machine 2009 Second International Symposium on Knowledge Acquisition & Modelling[24]

A fresh approach combining with SVM (support vector machine) classifier for the function of features selection is put forward in this paper. It consists of adequate information which is necessary for the function of classification. F-score models are utilized by their anticipated method in order to developed feature space by eliminating both irrelevant & redundant features. One of the significant strategy for the betterment of classification accuracy is, parameters optimization of penalty constant C & bandwidth of radial basis function (RBF) kernel.

Xiangying Liu submitted a technique for improvement of factors in SVM Based-on Ant Colony improvement rule in 2010 in Advanced Materials Research Vols. 121-122 pp 470-475[25]

A very recognized intelligent improvement method which is known as Airspace Control Order (Ant Colony Optimization) rule is implemented for the selection of factors. Positive reaction, equivalent machine & circulated calculation are the essential quality of ACO. This paper gives a comparison between ACO-SVM, PSO-SVM and conventional SVM is presented in this paper. By employing particle swarm improvement rule along with trial & error their factors are calculated.

In the year 2010 Qiu Shubo put forward a method for the identification of defects associated with document which is based on SVM [26]

A method for the identification of defects associated with document which is based on SVM is presented in this work. For identification of pictures related defects associated with document, algorithm based on SVM is submitted. For the identification of characteristic related defects associated with document, multi-class SVM is presented. The consequences of the study display that proposed system yields faster acknowledgment speed & average acknowledgment speed of 97%. Achievements are good in comparison to BP neural network algorithm. SVM algorithm yields faster acknowledgment speed & average acknowledgment speed. Therefore it is concluded that method for the identification of defects associated with document based on SVM presented in this work is very attractive and display that it can be largely employed.

Venkata Naresh Mandhala submitted method to organize the pictures of actual world in well formed 4 section by employing support vector machines in the year 2014 in IEEE International Conference

on Advanced Communication Control & Computing Technologies (ICACCCT) [27]

In the present scenario classification of images into well formed group is very difficult. A method to organize the pictures of actual world in well formed 4 section by using support vector machines is put forward in this paper. These 4 groups are coast, forest, highways & street Techniques for organization which is well known simplify badly on picture organizations responsibility when it is impossible to separate sections. Support Vector Machine is utilized by them for scene classification in this paper.

In the year 2005 durgesh K. Srivastava submitted a method for categorization of records by employing Support Vector Machine in Journal Of Theoretical & Applied Information Technology 2005[28]

Fresh pedagogy process, which is known as Support Vector Machine (SVM) is put forward. It is implemented on different information such as sugar information.

Information related heart , information related satellite and Shuttle . SVM is a dominant machine method which is originate from statistical learning. A considerable success it his article.It is established in the early 90's.

[4]PROBLEM STATEMENT

Support Vector Machine has been considered as an effective classification mechanism that has been used in poker. It is does not obtaining feature importance directly. Accuracy of Support Vector Machine might be raised using Support Vector Machine with integration of any optimized algorithm. Support Vector Machine is used with Genetic Algorithm in poker For feature selection. It is capable to minimize computation time. It also raises accuracy. But 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.

[5] TOOLS AND TECHNOLOGY

MATLAB

MATLAB is known as Language of Technical Computing. It is considered as a high-level language within interactive environment. Matlab enables us to perform computationally tasks quicker as compare to

other programming languages such as C, C++, & FORTRAN.

Matrix is a rectangular array of numbers in MATLAB environment. Its Meaning is attached to 1x1 matrices. These are scalars. In order to matrices within one row or column there are vectors. MATLAB had different ways to store numeric & nonnumeric data. It is best to consider everything as a matrix in beginning. Operations in MATLAB have been designed to be natural. Programming languages other than Matlab work within numbers one at a time but MATLAB offers to work within complete matrices quickly & easily.

[6]CONCLUSION

From the above implementation it has been concluded that the performance of SVM based PSO is better as compared to SVM based GA in POKER. 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.

[7]FUTURE SCOPE

In order to develop more efficient particle based implementation with integration of vector machine in poker is a challenging process. 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.

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