Grasshopper Optimization and Clustering Based Web Page Personalization

P.Pranitha, M.A.H. Farquad, G. Narshimha

Abstract*: Many IT industries are adopting collaborative tools to brand their connections with varieties of IT users. Nevertheless, the propagation of web based interaction services with world-wide-web as well as Information Technology based work on user's web browsing based model for unique user service is nominal. Thus, it becomes an issue or bottleneck to give unique customer satisfaction needs. Consequently, the online service based companies can adopt the user exclusive needs for business policies to get more users. Initial stages is search request expansion stages in this stages input search request is given as input the main aim of search request expansion stage is it will allow the relevant pages that do not contain the search request terms next stages is a preprocessing stages it is used to collect a visited web pages and the web page are converted in to numerical matrix then it is to be clustered with the aid of Cuckoo Search-Kernel Fuzzy C-Means Clustering (CS-KFCM). In this method is used to generate a vector for user search request and then find a far between users a vector, next to choose a minimum far centroid. Finally the Grasshopper Optimization is used to optimize a best top n number of pages. The application will be done in JAVA and the procedure of the proposed method will be analyzed with numerous available systems.

Keywords:- Information System work, Secrecy, Search request Expansion, Preprocessing, Cuckoo Search, Kernel Fuzzy C-Means Clustering, Grasshopper Optimization.

I. INTRODUCTION

In recent days, Internet has become biggest and most popular communication medium to the internet users. In this, huge volume of web pages, links and volume of data are added daily [1, 7]. Such things creates difficulty to identify target retrieval through web search engines by the user. The reason is for every search search request the web search engine results lakhs of result pages[2]. The traditional search engine uses sophisticated page indexing processes for web user to retrieve the relevant information, but it has difficult thing [9]. Autonomous web search is one of the types of search method which gives good results and retrieves the information for the each user according to user opinion [10]. It differs from web search and gives identical results to all users for identical search request. The autonomous web search can be classified into two types such as visit record based methods and profile based methods. In visit record based methods, which imposes preference to visited pages in user's search request antiquity. In some methods which are based on profiles those improves experience in searching through complex handler prototypes that are formulated from handler summarizing approaches [11].

When search engine return results of user search request and most relevant web page results are prioritized in the dispute which is performed by arrangement procedure [12]. In general search engine involves three processing steps such as crawling, index and arrangement. A crawler visits web page which leads to constructing web graphs. The crawler is used for retrieving the web pages and web contents. After collecting process, a content of the each page is analyzed to determine how it should be indexed. The indexer is used to stores and indexes information on the retrieved pages. In arrangement stage, several matching cases of web pages are sorted together according to the user's requests or choice. It measures the importance of Web Pages returned [4,6,8]. In 1990, only text based searching of user search request is used to dispput the result by the search engine. But, due to increasing growth of web, this method is not satisfied the user needs. So that arrangement a web page was introduced.

The web page arrangement has associated with various challenges such as some web pages made only for navigation purpose and other web pages are not possess self-descriptiveness quality [14]. Some of the common page arrangement processes are page cluster Process [2, 3], Weighted page cluster Process and Hyperlinked Induced Topic search Process [5]. For relevant web page results, efficient page arrangement processes are required [13]. The strength of page arrangement process is listed below:

- Optimum Search request time: Page Arrangement gives at crawling time.
- Optimum susceptibility to localized links: page cluster is generated use for entire Web graph.
- More Efficient: When compared with HITS, page cluster gives much greater efficiency
- Possibility: Compared to Hits process the page cluster process is more feasible. It calculates page cluster at crawl time rather than search request time [15].

In this work, it proposed efficient process to give better results in page arrangement system and also improves the web page secrecy.

II. LITERATURE REVIEW:

There are several methodologies were proposed by the several workers in the area of web secrecy. Some of these workers are listed below.

Ibrahim F. Moawad et.al [16] have proposed that due to the huge volume of information available on Internet search process and search results are more complex.

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S. P. Pranitha, Research Scholar, JNTUH, Hyderabad, Telangana, India
M.A.H. Farquad, Assistant Professor, Faculty of Computers and Information Systems, Islamic University of Madinah, Saudi Arabia
G. Narshimha, Professor and Head of the Department of CSE, JNTUH College of Engineering Sulthanpur, Telangana State, India

In the conventional search engines, the word corpus issues like polysemy and synonyms could made the search result for the extraneous users. Such issues were triggers strong need for personalizing web search results. In that work, author proposed the novel multi mediator method based mechanism to privatizing various results of web search. The process of searching in websites, that prototypical semantically optimized user's search request in two ways such as search request Optimization by user profile choices and search request Optimization by world net ontology. The author existed the detailed and simulation results evaluation through their proposed model and also solved the word corpus issues.

Suruchi Chawla [17] have proposed the effective autonomous web search for generating optimal clustered visited websites with the help of genetic process that was based on clustered web search request sessions for effective autonomous web search and the results were verified statistically. That showed an improvement in the average precision of autonomous web search that was based on optimal clustered visited websites over both classic IR and autonomous web search without optimal clustered visited websites. Thus proposed autonomous web search by optimal clustered visited websites was effective for better customized the web search according to user information needs.

Jialiang Huang [18] proposed that web secrecy had been adopted in portable device transaction framework. In web secrecy, timing is a crucial issue of implementation of web secrecy. In the portable device transaction framework, web secrecy was classified into 2 forms such as before search web secrecy and after search web secrecy. For understanding timing issues of web secrecy, author implemented and proposed the Gratifications method. It was used to investigate how portable device transaction motivations influence consumers use of BSWP and ASWP, respectively. They also investigate the role of an important personal dislocation. Moreover, BSWP and ASWP are predicted by varieties of transaction motivations. The theoretical and practical implementations are also discussed in that work.

III. PROPOSED METHODOLOGY DEFINITION:

In the web search secrecy several methodologies are proposed by workers. But these methodologies have some drawbacks. Some of the drawbacks are listed below.

- Some methodologies are in conventional search engines are re-cluster to retrieves the results as per the choices of users. The major concerns in these approaches are the process of searching is completely depends the basic search request with non-consideration choices of users [16].
- The burst can be defined as that the big enormous count of events in particular time bound. It ensues the website's data transmission and its procedures [21, 22].
- In Page arrangement, pure link analysis cannot combat spam whereas the Content similarity filters out spam pages to some extent. But such processes have higher memory requirements. However autonomous arrangement processes require more space and tend to be slower due to search request time computations.
- Web secrecy is used to give the right content in the right format at the right time in its obviously timing is a key issue of web secrecy [18].
- Secrecy preserving autonomous web search are far from optimal. Most of the available mechanisms are not supporting properly. This makes some user secrecy to be over protected and others are insufficiently protected [19,20].
- Autonomous search has varieties of effectiveness for varieties of kinds of search request; search request should not be handled in the same manner to secrecy. The violation of secrecy is also a well know issue in Autonomous Web Search approach. It generates ethical and security issues. Additional issue in this method is that users' needs are dynamic, it changes continuously.

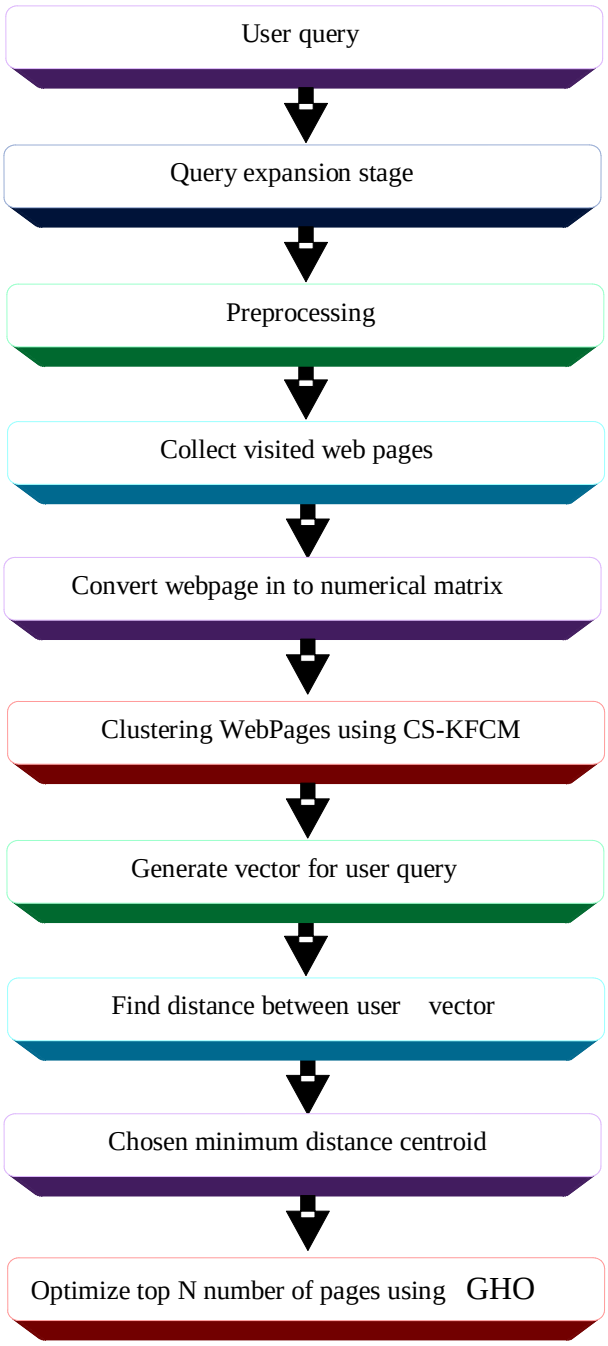

Fig 1: Proposed page arrangement based web page secrecy

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IV. PROPOSED METHODOLOGY:

In the area of WWW, search engines are play a vital role for surfing web pages of various websites as per the requirement of users. These are helping in collect information, examine various issues online, establish new proposals and accomplish data from web pages which are helping to retrieve the data to the users. Most of the time many search engines are providing web pages which may or may not useful. For relevant web page results, efficient page arrangement processes are required then only when the better result obtain for the user request at any point of time. It improve the web page secrecy structures and give better results by proposing efficient process. The existing processes such as KNN, Fuzzy, and neural network are hard to give relevant results. In this work, it use efficient Grasshopper Optimization method for page arrangement. The proposed method, initial stage is search request expansion. In this stage, the relevant pages are allowed and search request is taken as input data. Second step is preprocessing stage, in this stage visited web pages are collected and these web pages are converted into numerical matrix. Third step is clustered stage. In this stage, converted numerical matrices are clustered with the help of cuckoo search kernel fuzzy c means clustering process. It is used to generate the vector for user search request. Next, it find the far between user vectors and chosen the minimum far centroid. At last, it use Grasshopper Optimization which is used to optimize a best top n number of pages. The proposed method provides best results once the comparisons are made with the surviving processes and overcome in existing drawbacks.

4.1. Search request expansion stage:

In the proposed method, initial step is search request expansion stage. The search request expansion stage is the one of the methods in information retrieval. It is used for getting additional terms relevant to the given search request. It will help the searchers for expressing their intensions more accurately and also develops the precision of search results. In the search request expansion stage, input search request is taken as the input. It will allow relevant page that do not contain search request terms.

4.2 Preprocessing:

The Internet has huge volume of repository of web pages and links. Every day, large volume of web data are generated. User's accesses will be keep in log file of web pages, which contains irrelevant information retrieval. These data are first cleaned before putting them for the analysis. For this reason, it use preprocessing stage that is used for filter out irrelevant information and clean the data from inconsistence. It also collects the visited web pages and these web pages are converted into numerical matrix then it is to be clustered with the help of Cuckoo search – kernel fuzzy C- means clustering (CS- KFCM).

4.3. CS- KFCM Based Clustering:

Web page Clustering:

Clustering is an unsupervised arrangement method. A set of unlabeled objects are grouped into meaningful clusters. The page clusters can give a structure for organizing the large bulks of text for effective browsing and searching. Web page clustering has essential task in page analyzing that is distributed among various sites. The main challenge of web page clustering is to organize the pages and gives better results. It discovers valuable information from web contents like text, image, audio, video etc.

Clustering relevant pages:

The relevant pages are separated by preprocessing stage and these pages are stored in database are clustered based on given search request. For clustering purpose, it use vector space model that uses term sets to resists both pages and search request and employs basic linear operation to measures the similarities between them. Also it generates a vector for user search request and finds the far between user page vectors. For clustering it use CS-KFCM process. Here it discuss the hybrid a CS-KFCM process it will be explained below.

Cuckoo search:

The cuckoo search is the meta-heuristic process which is stirred by bird cuckoo. It never constructs its own structure. So, it puts their eggs in additional other fowl structure. In some situation, if the other fowl identifies the cuckoo's eggs and not their egg then it will throw away the egg from its structure or simply rid its structure and construct a novel structure. In the structure, each egg reexists the solution and cuckoo egg reexists the novel and good solution. The novel solution is based on existing one and the changes of some characteristics. The structure has multiple eggs which reexists set of solutions. Cuckoo search is used in several applications such as speech recognition, job scheduling, global Optimization, solve the scheduling issues etc. it also used for various Optimization issues.

- Every cuckoo puts an egg at once in a time and it stores within arbitrary selected structure.
- For the coming generations, transmit the best quality and effective structure of the eggs.
- The fixed structure of hosts in nearest one and a is another fowl recognizes the cuckoo egg probability pa=0.1 after another fowl may throw them away or to build a new innovative structure.

Initialization Stage

The large sample (Sl, where l=1, 2,3……k) of host structure is originated arbitrarily.

Creating novel Cuckoo Stage

The tariff flights is applied a cuckoo to chosen at arbitrary, it creates novel descriptions. Next to find utilities capacity concern, generating new cuckoo and to be evaluate.

Fitness Evaluation Stage

To analyze the fitness procedure as per eq. Along with next select the finest one.

$$fitness = \max imum\ popularity \quad (1)$$

Updation Stage

Update the basic description by charge flights through cosine formula is handled. The main advantage of the novel clarification will be examined and a structure will chose randomly. When the dominance of novel determination chosen structure is increased comparative to earlier determination, and is treated as alternative novel description (Cuckoo). Otherwise, the previous clarification is keep as finest description. The chargeable flights used for normal finding technique in cuckoo,

$$m_i^* = m_i^{(t+1)} = m_i^{(t)} + \alpha \oplus Levy(n) \qquad (2)$$

Here t is capacity of step, and $\alpha > 0$ is the capacity of step is mounting for feature boundary. And the product for item wise $\oplus$ is equivalent to which are operated , $x_i^{(t+1)}$ and reexists $(t+1)_{th}$ egg (feature) at structure (solution), *i=1,2,….m*, and *t=1,2,..d*. The chargeable flights consumed randomly with extent the shattered from a Charge allocation. So, the CS process is additional item in finding the examination split as its phase continues significantly for continues in future . Instead of this stage it use KFCM process

It is outlined a nonlinear map as It Define a nonlinear map as $\varphi: x \rightarrow \varphi(x) \in F$, where $x \in X$ X specifies the data space and F is the converted feature space with high or even unlimited dimensions. KFCM has following procedures

$$J_{KFCM}(U,V) = \sum_{k=1}^{c} \sum_{i=1}^{n} \mu_{ki}^{m} \left| \phi(x_k) - \phi(v_i) \right|^2 \qquad (3)$$

$$\left| \phi(x_k) - \phi(v_i) \right|^2 = K(xk, xk) + K(vi, vi) - 2K(xk, vi)$$

Where

$k(x,v) = \phi(x)\phi(x)^T$ is the inner product core method. The Gaussian procedures as the core method.

$K(x,v) = \exp\left(\frac{-|x-v|^2}{r^2} \right)$ after that $k(x,v) = 1$ as per the equation 4, eq. 3 can be written as

$$J_{KFCM}(U,V) = 2\sum_{k=1}^{c} \sum_{i=1}^{n} \mu_{ki}^{m} (1 - K(x_k, v_i)) \qquad (5)$$

Diminishing the 5th equation in the limitation of U, it will be:

$$\mu_{ki} = \frac{\left(\frac{1}{1-k(x_k, v_i)} \right)^{\frac{1}{m-1}}}{\sum_{j=1}^{c} \left(\frac{1}{1-k(x_k, v_j)} \right)^{\frac{1}{m-1}}}, \forall i = 1,2,\ldots,c, k = 1,2,\ldots n$$

$$v_i = \sum_{k=1}^{n} \left(\frac{K\mu_{ki}^{m}(xk, vi)xk}{K\mu_{ki}^{m}(xk, vi)} \right), \forall i = 1,2,\ldots c \qquad (7)$$

Eq(6) and eq(7) are derived using Gaussian core method. it can use other procedures satisfying $K(x,x)=1$ in the 6th and 7th equations.

In routine application like as mentioned in the below RBF procedures and hyper tangent procedures.

RBF procedures:

$$K(x,v) = \exp\left(\frac{-\sum_{i=1}^{c} \left| x_i^a - v_i^a \right|^b}{r^2} \right) \qquad (8)$$

Hyper target procedure,

$$K(x,v) = 1 - \tanh\left(\frac{-|x-v|^2}{r^2} \right) \qquad (9)$$

RBF procedures with a=1, b=2 moderates to the collective utilization of Gaussian procedure. In fact, Eq.(5)can be viewed as kernel-induced novel metric are in the data space, which is defined as the following:

$$d(x,v) \xrightarrow{\Delta} |\phi(x) - \phi(v)| = \sqrt{2(1 - K(x,v))} \qquad (10)$$

Based on the equation(8), the extra weight *K(xk, vi)* of the data point is capable, which will be finds the likeliness among x_k and v_i . If x_k is an outlier, i.e., x_k is away from the rest of the data points, $K(x_k, v_i)$ will be very small, with this the addition of data points weight shall be maximum strong. The solution of KFCM (new) is updated in eq. (2).

The Fuzzy c means process is the conventional hard c means clustering. This method is the effective method only for when data is non- overlapping. To overcome this issue, it use kernel based fuzzy c means process. In this approach, both data and cluster centers are mapped from original space to novel space by using ϕ the objective procedure is given as follows. FCM (Fuzzy c-means) can converge faster than hard k-means, but its computational complexity develops. In non-overlapping cases the FCM works will be perfect. For non-linear versions of FCM is not good for that KFCM is required and gives better results. For KFCM, does not require necessary count of clusters in before; which finds the count of clusters in the data and produces the considerable outcome than FCM.

Reject Worst Nest Stage

The bad structures are removed in this level, depend on their option values and novel ones are constructed. Afterward, depend on their suitability task the best explanations are marked. Next the optimum explanations are predictable and marked as finest results.

Stopping Criterion Stage

Until it reaches the maximum steps accomplishes this procedure is replicated.

In order to find the quality of data in the feature value of the each group is applied to the clustering process to generate a vector for user search request and then find a far between users vector, next to chosen a minimum far centroid. Finally it include a Grasshopper Optimization to optimize a best top n number of pages.

4.4. Grasshopper Optimization:

In this work, it have utilized a grasshopper process for Optimization methodology. The A Grasshopper is a pests (GP). This pest is valuable which develops the crop, forms for production level. The GPs are seen regularly in the environment, mechanism syndicate with one of the biggest group with all pests. The size of the group will be consider as central scale and terrible for agriculturalists. One of the comportments of the group is the GP group. Food searching the source is the major specific one in GP grouping.

It can strategy a novel nature-inspired process by finding away arithmetically by this performance prototypical.

Step 1: The grouping behavior of GP is simulated and implemented mathematically exhibited in the below,

$$P_i = S_i + F_i + W_i \quad (11)$$

Where P_i specifies the area of the i^{th} GP, S_i is the social interface, F_i is the gravity force on the i^{th} GP, and W_i shows the wind advection.

Step 2: Note that to give random behavior the eq. can be written as $P_i = r_1 S_i + r_2 F_i + r_3 W_i$ where *r1*, *r2*, and *r3* are arbitrary numbers in *[0, 1]*.

$$S_i = \sum_{\substack{j=1 \\ j \neq i}}^{N} s(d_{ij}) \hat{d}_{ij} \quad (12)$$

Where d_{ij} is the far among the i^{th} and the j^{th} GP, considered as $d_{ij} = |P_j - P_i|$, *s* is a procedure to describe the strength of social forces $\hat{d}_{ij} = \frac{P_j - P_i}{d_{ij}}$ is a unit vector from the i^{th} GP to the j^{th} GP.

Step 3: The *s* procedure is used to describe the social forces and calculation as mentioned below:

$$S(r) = Ae^{\frac{-r}{l}} - e^{-r} \quad (13)$$

Where *W* represents the intensity of attraction and $\int$ is the attractive length scale. The process *s* is demonstration that the effect on the social interaction (attraction and repulsion) of GPs.

Step 4: Main outline of the process s in this period, the F element in equation (5) as mentioned below.

$$F_i = g\hat{e}_g \quad (14)$$

In this g is the constant for gravitation and $\hat{e}_g$ mentions a unity vector in the direction of the center of earth.

Step 5: The *W* element in in the equation (1) as below.

$$W_i = u\hat{e}_v \quad (15)$$

And *c* is a constant point and $\hat{e}_v$ is a unity vector in the direction of wind.

Step 6: Leprechaun GPs does not have wings, because of this the directions are linked with the directions of wind. Replacing *S*, *F*, and *W* in equation (11), this eq. becomes after elaborating as below.

$$P_i = \sum_{\substack{j=1 \\ j \neq i}}^{N} s(|p_j - p_i|) \frac{p_j - p_i}{d_{ij}} - g\hat{e}_g + c\hat{e}_v \quad (16)$$

In this s and $S(r) = Ae^{\frac{-r}{l}} - e^{-r}$, *N* is the amount of GPs, meanwhile leprechaun GPs terrestrial on the earth, its location did not cross the threshold value. Consequently, in the cluster model and Optimization methodology it is not used perfectly due to restricts the process from discovering and manipulating the space in search towards a solution. A free space is using for the utilization of group. Though, Equation. (7) is important for model of collaboration among GPs.

$$P_i = \left(\sum_{\substack{j=1 \\ j \neq i}}^{N} \frac{ub_d - lb_d}{2} s(|p_j^d - p_i^d|) \frac{p_j - p_i}{d_{ij}} \right) + \hat{T}_d \quad (17)$$

Here ub_d is the upper bound in the D^{th} measurement, lb_d is the lower bound in the D^{th} measurements $S(r) = Ae^{\frac{-r}{l}} - e^{-r}$, $\hat{T}_d$ is the Worth of the D^{th} measurement in the target (best solution found so far), and *u* is a decreasing coefficient to shrink the comfort zone, repulsion zone, and attraction zone. Note that *S* is almost similar to the *S* component in Eq. (11). Though, it do not consider gravity (no *G* component) and assume that the wind direction (A component) is always towards a target $\hat{T}_d$ .The next location of GP is defined by depends on their current location which is shown in Eq (17). This procedure considers only current GP location with respect to other GPs and also it have considers all GP status to define the search mediators location around the target.

$$C = c\max - \frac{c\max - c\min}{L} \quad (18)$$

Where *c max* is the max value, *c min* is the minimum value, l indicates the current iteration, and *L* is the max number of iterations. The location of the best target obtained so far is updated in each iteration. In addition, the factor *c* is calculated using Eq. (9) and the far between GPs are normalized in [1, 5] in each iteration.

V. RESULTS AND DISCUSSION

The experiments are conducted in a Cloud Sim with JAVA. The proposed work is applied over clustering using Java along with the continuous experiments. This proposed one applied on a system with Windows XP operating system with 2GHz dual core and the RAM Capacity is 4GB with 64-Bit main memory. All the experiment results of the proposed work is described below:

5.1. Performance Evaluation

Based on execution time, memory taken for execution process, the performance of the proposed clustering and Optimization method data analysis model evaluation is done.

5.1.1 Utilization of Memory

The combination of JAVA and CloudSim programs makes suitable to the utilization of memory. All the novel objects were create and keeping in stack and utilization of memory of the proposed work to be calculated in bits.

5.1.2. Running time

Based on the memory values, the time to run the above combination of program is directly fixed for evaluation. The coefficient values are ignored due to the time constraints reexisted. In many cases, the time period is calculated in milliseconds in lower order terms.

Table I: Time measures evaluation for the proposed study

Input Search request	Time
Data Mining	2268
Image Processing	3095
Software Engineering	2845
Data Mining and Image Processing	2607

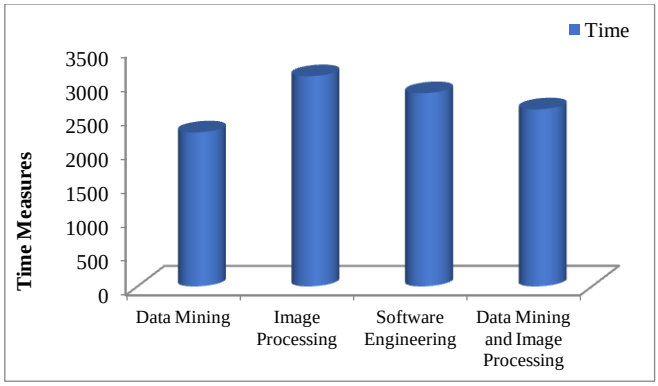

Fig 2: Graphical reexistation for the proposed Time Measures

The attainment of the efficiency in terms of time as per the table I and the plotted graph as shown in the figure 2. The Optimization time is measured based on an input search request. In the data mining input search request obtains 2268ms to complete a process in the following search request image processing, software engineering, Data mining and image processing takes a tiniest volume of time is needed to finish the procedure such as 3095, 2845and 2607ms to complete a process. Therefore, it is required the minimum time to finish the procedure. In the table II evaluates a memory measures.

Table II: Memory Measures evaluation for the proposed study

Input Search request	Memory
Data Mining	1105454
Image Processing	1000545
Software Engineering	945485
Data Mining and Image Processing	1054545

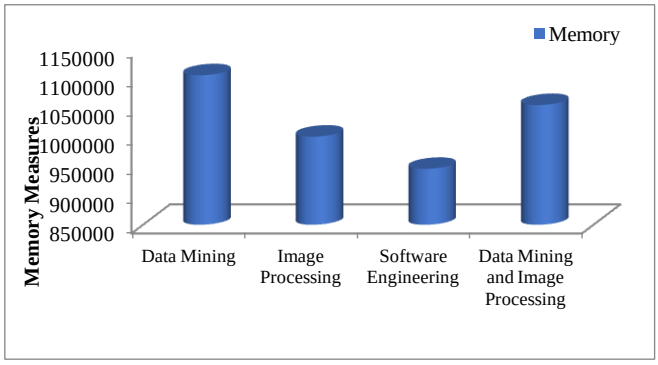

Fig 3: Graphical reexistation for the proposed memory measures evaluation

The attainment of the efficiency interms of memory as per the table I and the plotted graph as shown in the figure 2. The Optimization memory is measured based on an input search request. In the data mining input search request obtains 1105454bytes to complete a process in the following search request image processing, software engineering, Data mining and image processing takes a tiniest volume of time is required to finish the procedure such as 1000545, 945485, and 1054545bytes are taken to this process. Therefore, it can obtain a tiniest volume of memory is needed to finish a procedure. In the table II evaluates a memory measures

Comparative Analysis

Table III: Comparison for proposed and existing Time measures

Input Search request	Proposed GHO	Existing WOA
Data Mining	2268	2351
Image Processing	3095	3129
Software Engineering	2845	2911
Data Mining and Image Processing	2607	2624

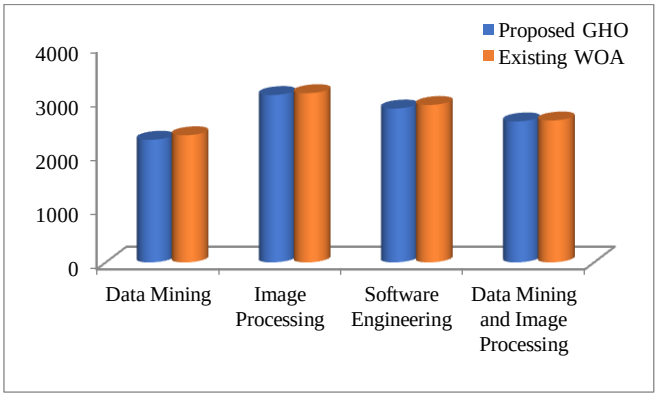

Fig 4: Representation of proposed and existing time measurements evolution comparison

It will compare to the proposed WOA method to the existing GSA, according to this contrasting the recommended method gives a perfect accurate results to this evaluation. The time measures of traditional Whale Optimization (WOA) for input search request takes time for complete a process such as 2351, 3129, 2911and 2624. When it compare these results to the proposed GHO work the method would take a tiniest volume of time is needed to finish a process. Therefore the proposed concept describes that the fulfillment of the page arrangement system.

Table IV: Comparison for Proposed and Existing Memory measures evaluation

Input Search request	Proposed GHO	Existing WOA
Data Mining	1105454	1165575
Image Processing	1000545	1094554
Software Engineering	945485	958855
Data Mining and Image Processing	1054545	1124852

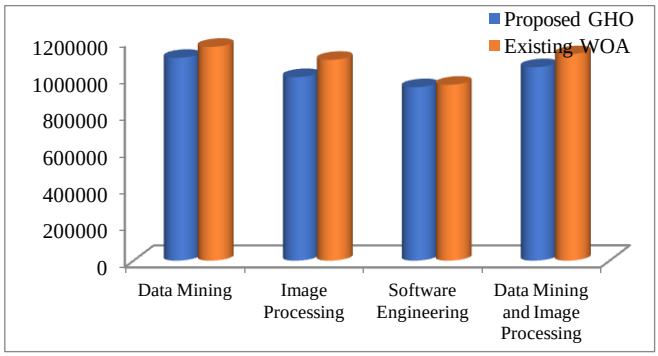

Fig 5: Comparison of suggested and traditional memory methods

It will compare to the proposed WOA method to the existing GSA, in this contrast the suggested method gives a perfect accurate values for this evaluation. The memory measures for current WOA for input search request takes memory space for complete a process such as 1165575, 1094554, 958855and 1124852. When it compare these results to the proposed GHO work the method would take a minimum volume of memory space is required to complete a process. Therefore the proposed concept describes that the fulfillment of the page arrangement system.

VI. CONCLUSION

The work examines how users' web experience and their perceptions towards secrecy influence their attitudes towards switching to autonomous website. The Optimization step aims to give information improvement of the web page secrecy structures and exist better results on the page arrangement system. In Traditional clustering and Optimization methodologies, such as KNN and Fuzzy, Neural Network, exist difficulties in providing relevant results for web page secrecy workers. In the proposed method gives better results in the step of page arrangement. Therefore, as a way to acquire good clustering and Optimization results, it was developed a process based on Grasshopper Optimization. In the proposed web page secrecy based page arrangement system has overcome the disadvantage of the existing system. To give these, various processes have been developed to cluster the pages effectively it discussed some of these processes, proposed a method to cluster pages. In this work certain page arrangement process, for webpage arrangement based on varieties of parameters, along with the proposed page arrangement process, Whale Optimization methodology is used. Furtherly may be expected more efficiency by incorporating the operators for execution to the system

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