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 an individual.
 2 are friends.
 3 is company.
 more than 3 makes a society. The arrangement of these elements makes the letter 'C' connoting 'Computer Society of India'.
 the space inside the letter 'C' connotes an arrow - the feeding-in of information or receiving information from a computer.

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Editorial



Prof. (Dr.) S. S. Agrawal
Chief Editor

Dear Fellow CSI Members,

At the outset, we wish to all our valued CSI members a happy, prosperous and productive new year 2019.

A people's relationship to their heritage is the same as the relationship of a child to its mother.

— John Henrik Clarke

It is not the honor that you take with you, but the heritage you leave behind.

— Branch Rickey



Prof. (Dr.) R.R. Deshmukh
Guest Editor

After a thematic issue focusing on Big Data Analysis, the theme of Computers Society of India (CSI) Communication for December 2018 issue is "Heritage Computing"- an important, interdisciplinary area of research and application.

Our India is unique country in the whole world having large heritage and diversity in languages having about 86 different scripts. Most of the content on internet and ICT solution are still available in English. Therefore this issue is enriched by number of articles on Heritage Computing received by professionals, researchers and business communities.

The cover story by S. Balakrishnan and R. Yogeshwaran focuses on Heritage Computing and its Impact, Digital Preservation - Centre of Excellence, Digital Preservation System for Disposed Cases, and Digital Library of India along with Negative side of Heritage Computing.

The Technical trends is showcased with article "Microarray Image Analysis using Non Hierarchical Clustering Algorithm in MATLAB" by B. Saichandana, J. Harikiran, H. Pavan Kumar.

In Research Front we have contributions as, "Fast Food Chain Analysis with Based on Ensemble Classifier and Different Data Mining Classifier" by Rahul Deo Sah, Raja Ram Dutta, and Mr. Asit Kumar Mohapatra.

Other articles in this issues are,

- "Remote Logger -Simplifying Message Monitoring" by Trilok Kumar Saini, Dr. Subhash C. Sharma.
- "Insight into Databases through SQL to NoSQL" by Baisa L. Gunjal
- "Ancient Indian (Vedic) Intellectual Heritage Knowledge-base: Preserving Heritage Language" by Deepali Kamthania
- "Big Data For Business Analysis" by Kanahaiya Lal Ambashtha
- "Aspects, Domains and Tools of Heritage Computing" by Dr. D. V. Kurmude, Dr. S. N. Kakarwal

This issue also gives detailed information about reports on Fifth State Level CSI Technical Symposium OVERLOAD++ held in Oct. 2018 by HKBK College of Engineering, Bengaluru, One-day National Workshop on "Data Science and Machine Learning using Big Data & Hadoop", 3rd National Conference on "Innovative Realms in Management and Technology" (Association with Computer society of India (CSI) & DMA), A brief Report of Two-day National Workshop on "Cyber Security and Data Privacy", Review of the book discrete mathematics, and CSI activity reports from chapters and student branches.

We are thankful to all contributors and look forward to receive your valuable articles in future also.

We express our gratitude to the editorial board, authors and reviewers for their great contribution and support to this issues.

With kind regards,



Prof. (Dr.) S. S. Agrawal
Chief Editor



Message from the Vice President cum President Elect

From : Vice President, Computer Society of India

Date : 01 December, 2018

Email : vp@csi-india.org / Cell : (91) 82106 93239



The theme of this issue of CSI Communication Heritage Computing is of great importance in a country like India where people are living with diversity in religions, cultures & languages. India is a country having 22 scheduled languages besides heritage languages and over eight hundred widely used languages with different scripts. Despite a very impressive growth of computers and the Internet over the past few decades, most of the content on the Internet and in ICT based solutions in India are still available only in English. It is the real contrast to the ground reality as hardly 10% of Indians use English as a language for communication. But the penetration of IT to masses is possible in India only if we develop tools and technologies to overcome this language barrier. Hence, for over the last 25 years, C-DAC has been pursuing pioneering research in Language Technology and Heritage Computing. In this connection Choosing Heritage Computing as the theme of December Issue of CSI Communication is praise worthy.

78th CSI Chapter at AGRA, UP & CSI 79th Chapter at Lakshman Garh, Rajasthan

The expansion of CSI continues all over the country by establishing more & more Chapters. I am pleased to bring your kind notice about the launch of Agra Chapter as the 78th & inauguration of Lakshman Garh Chapter at Mody University of Science & Technology Sikar Rajasthan as 79th chapter apart from establishment of many new Student Branches within last three months particularly Noida Institute of Engineering & Technology at Greater Noida & Sandeep University at Nasik.. I congratulate the Member & management committee of respective chapters & student branches in general & the respective Regional Vice Presidents Prof Arvind Sharma, RVP-I, Prof. Vipin Tyagi, RVP III & Mr. Pradip Rathi, RVP-VI in particular.

In spite of being a new chapter, Agra Chapter became very active & conducted two prominent activities i.e. One Day National Workshop on Data Science & Machine Learning & one day National Workshop on Cyber Security & Data Privacy in collaboration with RBS Management Technical campus is commendable. Further the organization of 3rd Natinal Conference on Innovative Realms in Management & Technology at Chenderprabhu Jain College Of Higher Studies witnessed the quality deliberations & presentations.

Though CSI is having good numbers of Chapters, Institutional Members, Students Branches still then it's association with the

increasing number of companies & corporations are most required. In this direction, the efforts will be to enhance our services so as to render satisfactory services to the members & ensure their continued association members of CSI know that csi-india.org is the official website of CSI since the development of website by the Computer Society of India. A couple of Persons are misguiding the members through an unauthorized website (for which case has already been registered in Cyber Crime Police Station) & giving the wrong information. Law will take it's own action. Therefore if somebody is having the faith in law, there is no need of interpreting his own as correct & mislead the members.

CSI is functioning well. More & more Technical activities are conducted by the chapters & student branches which are quite visible by the reports published in CSI Communication. Chapters & student branches are requested to come with more & more technical activities to cater the effective services to their members, because it is the need that members should be addressed regularly & value to members should be enhanced.

I take this opportunity to seek the active & kind support of the Members to make CSI more Dynamic, Vibrant, Productive & Sustainable to achieve the height of excellence.

I sincerely request all the Office Bearers, Executive Members, Chapter Managing Committee, CSI student Branch Coordinator, SIG Managing Committee & CSI Office Staffs to kindly work with responsibility for the Society (CSI) to serve honestly for the cause of every Division, Region, Chapter, SIG, Student Branch & every Individual Members including Student Members.

Let us come forward to make Clean CSI & Green CSI with transparent activities & visions to make it Swachh, Pardarshi & Hara Vara.

Wishing all of you a Happy New Year

AkNayak

Prof. Akshaya Nayak
Vice President, CSI

Heritage Computing and its Impact

► **S. Balakrishnan**

Professor, Department of Information Technology, Sri Krishna College of Engineering and Technology, Coimbatore, Tamilnadu, India.

► **R. Yogeshwaran**

First Year, Department of Computer Science and Engineering, Sri Krishna College of Engg. and Tech., Coimbatore, Tamilnadu, India.

Overview

Heritage Computing is nothing but the act of preserving the ancient languages by storing their grammar and literature in a computer-based medium and preventing the language from becoming extinct. India is a unique country having more than 22 officially recognized languages. These languages have valuable literature that has to be preserved. The ultimate growth of the modern society is slowly destroying the ancient literature it is in a high risk of being replaced by the foreign languages. So the Indian government had made an initiative to preserve these languages. In India C-DAC (Center for Development of Advanced Computing) is an organization involved in standardization and representation of heritage scripts such as grantha, Vedic, samavedic, modi, etc.....

Heritage Computing in Action

C-DAC is involved in standardisation and representation of heritage scripts such as Grantha, Vedic, Samavedic, Modi, etc. in modern standards such as unicode.

Jatan: Virtual Museum Builder

Virtual museum builder has been standardized by the ministry of culture for all the museums under the ministry. It has been deployed in various national and state museums.



Preservation Information Documentation (Egov-Pid) standards

This standard proposes to catch the vast majority of the safeguarding data (metadata) naturally after the last e-record is made by the e-government



Fig: On screen key board to assist typing vedic accents for RgVeda, Yajurveda, Samaveda (Courtesy – CDAC)

framework. Not every one of the documents is saved under this standard this metadata is required just for the records that must be protected for quite a while, (for example, 10 to 15 years) or forever according to the prerequisites determined in the ISO 14721 Open Archival Information Systems (OAIS) reference model.

Digital Preservation - Centre of Excellence

Digital preservation's Centre of Excellence at C-DAC has established some guidelines and also proposed some standards according to which an electronic record is to be created, so that the data is produced in a preserved manner. The preservation standards for the digital data is created, adopted and notified by the Ministry

of Communications and Information Technology, Government of India.

Digital Preservation System for Disposed Cases

Digital preservation system for disposed cases for courts developed under national digital preservation programme.

Digital Library of India

C-DAC, has established a large amount of regional scanning centres in all areas for digitization of rare and copyright free books of various regions of India including the north-eastern region. It points in making an entrance of the antiquated legacy books in the advanced library of India, which will cultivate imagination and free access to all human learning.

PROCESSING TOOLS

C-Vyasa

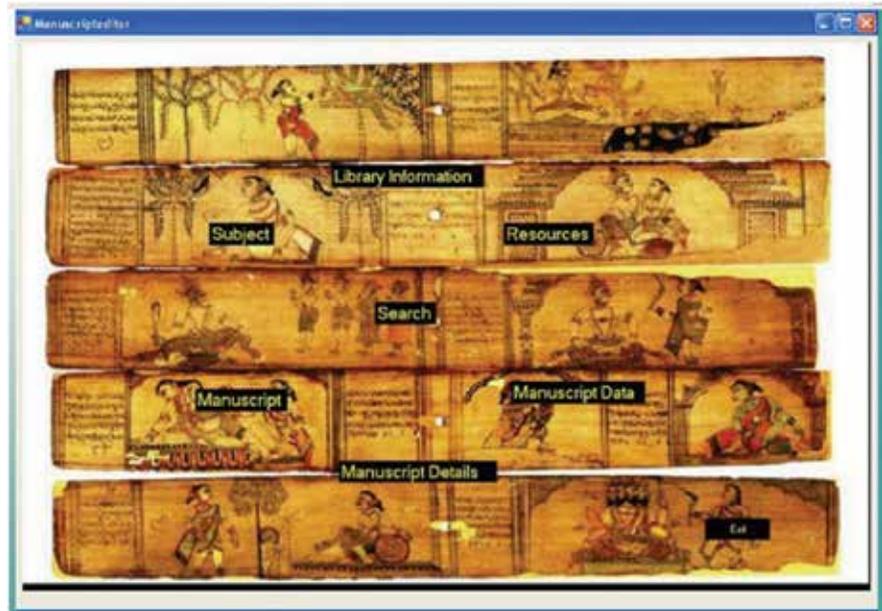
C-Vyasa Sanskrit authoring System is Word-processor for writing articles in Sanskrit. A utility for sorting, searching, indexing, file conversion is provided with the software. Applications from heritage texts, such as, RgVeda, Yajurveda, Sama Veda, Vedanga and Upanga texts, prose and poetry are linked to the application. Scholars can search and fetch any reference material required while writing articles. Efforts are on to support typing in rare Indian scripts.

Pandulipi Samshodhaka

Pandulipi Samshodhaka is manuscript processing software, useful to scholars in preserving, processing and analyzing the manuscripts. Image processing tool is augmented with the software for Manuscript image processing. This software can be used to create catalogue of manuscripts, and also content creation for manuscript images. Pandulipi Samshodhaka supports both ISCII and Unicode based storage. Support to Vedic accents and Grantha script is provided with the software.

Negative side Of Heritage Computing

If something has a positive side then definitely it has a negative side. Although the languages are preserved by storing them in a digital medium the languages cannot be fully stored in a digital medium some intricate parts of the language cannot be digitalized,



Picture (Courtesy – CDAC)

which means that some minute beauty of the language will be left behind and the beauty will slowly decay with time.

Though digitized data can be easily retrieved it's a very big task to digitize them. It needs a lot of time and patience to search for the literary works in the language and also the grammar of the language.

Conclusion

Though Heritage Computing can prevent the language from extinction,

we as a child of the language should contribute something to our mother language. We could not simply let our mother language die out of insanity it is a very important duty for us to keep our mother language live. Heritage Computing is a fast growing field in computing it has grown rapidly in recent years and it is still growing at a very fast rate. We are in the 21st century which is going to face the computer revolution or the fourth industrial revolution.

About the Authors



Dr. S. Balakrishnan, (CSI Membership 2060000034) is a Professor at Sri Krishna College of Engg. and Tech., Coimbatore, Tamilnadu, India. He has 17 years of experience in teaching, research and administration. He has published over 15 books, 3 Book Chapters, 6 Technical articles in CSI Communications Magazine and over 100 publications in highly cited Journals and Conferences. His professional awards include: Deloitte Innovation Award, Cash Prize ₹ 10,000/-, from Deloittee for Smart India Hackathon 2018, Patent Published Award, Impactful Author of the Year 2017-18, Best Faculty - Computer Science and Engineering, Teaching Excellence Award, I2OR - Bright Researcher Award, Best Outstanding Faculty Award, Best Teacher Award, Best Research Paper Award, Best Book Publication Award and Best Book Chapter Award, Special Contributor Award and

Star Performer Award. His research interests are Artificial Intelligence, Cloud Computing and IoT. He has delivered several guest lectures, seminars and chaired a session for various Conferences. He is serving as a Reviewer and Editorial Board Member of many reputed Journals and acted as Session chair and Technical Program Committee member of National conferences and International Conferences at Vietnam, China, America and Bangkok. He has filed/published Patents on IoT Applications. Dr. Balakrishnan is a life member of ISTE, IAENG, IEAE, IARDO, CSI, UACEE, SDIWC and CSTA.



Mr. R. Yogeshwaran is pursuing First year Computer Science and Engineering in Sri Krishna College of Engineering and Technology, his area of interests are Cyber Security and Business Systems.

About the Guest Editor

Professor (Dr.) R.R. Deshmukh



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member of ACEEE. He was member of Management Council, Academic Council and Senate Member of Dr. B. A. M. University, Aurangabad. Edited Twelve books and published more than 200 research papers in reputed Journals, National and International conferences. He is reviewer and editor of several journals at national & international level. He is a Member of Editorial Board of Everymens' Science, ISCA. He has organized several workshops and conferences. He is nominated as a subject expert on various academic & professional bodies at national level government bodies. He was a Chairman, Ad-hoc Board of Computer Science & IT, Chairman, Ad-hoc Board of Bio-informatics, Faculty member for Engineering, Science & Management Faculty & Member of various committees at university level. He has visited University of Santiago de Compostela, Spain under the Research Excellence Program USC - India (PEIN Fellow). The Scholarship granted by the University of Santiago de Compostela for one Month. He has visited University of Washington, Seattle and Western Washington University, Bellingham, WA, USA for academic purpose. He has Visited Shanghai, China for presenting the research paper at 18th Oriental COCOSDA (International Committee for the Coordination and Standardization of Speech Database and Assessment Techniques) /CASLRE Conference, organized by Shanghai Jiao Tong University, Shanghai, China. Visited Bangkok, Thailand for presenting the paper at Fourth International Conference on Intelligent Systems, Modeling and Simulation (ISMS 2013) organized by Kasetsart University, Bangkok, Thailand. He has completed three research projects from UGC and received grants of more than 18 Lakhs. His areas of specialization are Human Computer Interaction, Digital Speech Signal processing, Data Mining, Data Warehousing, Image Processing, Pattern Recognition, Artificial Intelligence, Computational Auditory Scene Analysis (CASA), Neural Networks etc. He received the "Bharatratna Mother Teresa Gold Medal" Award 2015 for outstanding service in Education and Research to strengthen India's Unity and economic development and "Best Teacher Award" Award 2017 for Outstanding Excellence and Remarkable Achievement in the field of Teaching, Research and Publication from IRDP Group of Journal, Chennai, India. Received Best Research Paper Award in 38th INCA International Congress (October, 2018) and won First prize in Inter University State Level Research Festival "AVISHKAR - 2009" under H. L. F. A. category at Teacher level & for the Team Management. His profile has been published in the 32nd Edition of Marquis Who's Who in world 2014 which consists profiles of more than 55,000 people working in different areas around the world.

► CSI CALENDAR 2018-19 ►►►



Date	Event Details & Contact Information
FEBRUARY 25-28, 2019	Second International Conference on Advanced Computational and Communication Paradigms (ICACCP-2019) International Symposium on Computer Vision and Machine Intelligence in Medical Image Analysis (ISCMIM) http://symposium.icaccpa.in/ Venue: Sikkim Manipal Institute of Technology Convener : Prof. Debanjan Konar, Sikkim Manipal Inst. of Technology, Sikkim, India Co-Convener : Prof. Chinmoy Kar, Sikkim Manipal Institute of Technology, Sikkim, India
MARCH 01-02, 2019	2019 International Conference on Data Science and Communication (IconDSC) in technical association with IEEE-Bangalore Section, IEEE-ComSoc, Bangalore Section and CSI Division IV, Communication. Submission Deadline: 10 November '18, https://christuniversity.in/icondsc/ Contact : Dr. Samiksha Shukla, 9880462311 samiksha.shukla@christuniversity.in
13-15, 2019	INDIACom-2019 (IEEE Conference ID: 46181 SCOPUS Indexed) 13th INDIACom; 2019 6th IEEE International Conference on "Computing for Sustainable Global Development" Contact : Prof. M. N. Hoda, General Chair, INDIACom-2019, Director, Bharati Vidyapeeth's Institute of Computer Applications and Management (BVICAM) E-mails: conference@bvicam.ac.in , indiacom2019@gmail.com Tel.: 011-25275055 TeleFax: 011-25255056, Mobile : 09212022066

Microarray Image Analysis using Non Hierarchical Clustering Algorithm in MATLAB

► B. Saichandana, J. Harikiran and H. Pavan Kumar

Associate Professor, Dept. of CSE, Shri Vishnu Engineering College for Women, Bhimavaram.

Introduction

Microarray analysis play an important role in parallel analysis of expression levels of genes in a given organism. The Microarray Image consists of array of spots, each spot represents the gene expression value of respective gene [1]. The Microarray image analysis for identification of information in form of log ratios for each and every gene spot is carried out in three stages namely, Gridding, Segmentation and Information Extraction. This log ratio will represent the transcription abundance of test and control gene information. The positive expression indicates the over-expression, while negative expression indicates under-expression between the control and treatment genes [5]. The steps involved in analysis of microarray image is shown in figure 1. This article focuses on the segmentation of microarray using non-hierarchical clustering algorithm with implementation in MATLAB.

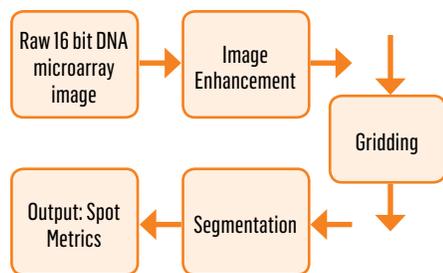


Fig. 1: Analysis of Microarray

Image segmentation refers to grouping of pixels into number of non-overlapping regions, with each region having same color value. Non-hierarchical clustering algorithms group pixels in the image using an optimization function. It iteratively assigns pixels of the image to different

clusters while utilizing optimal value (maximization or minimization) of the function. The best algorithm in non-hierarchical clustering is k-means clustering algorithm.

K-means clustering algorithm

The K-means clustering algorithm is a partitioning method which assign pixels to a user-defined mutually exclusive number of clusters (k) in such a way that maximizes the separation of those clusters while minimizing intra-cluster distances relative to the cluster's mean or centroid and returns the index value of cluster, for which the pixel is assigned. The k-means clustering is always better than hierarchical clustering for large amount of data. The algorithm mainly dependent on three parameters 1) numbers of clusters k 2) Selection of initial values of centroids 3) the distance metric (optimization function) used in assignment of pixels to different clusters. This article presents the implementation of k-means on microarray image with different parameters available in kmeans function in MATLAB and shows how best the clusters are obtained using silhouette index.

The k-means clustering is given as follows:

1. Initialization of k centroid values. This initialization in MATALB by using name -'Start' and values 'plus', 'cluster', 'sample', 'uniform' and 'numeric' in the kmeans function. The default value is 'plus', which selects k pixel values from image randomly as centroid values.
2. Assignment of pixels to the corresponding cluster based on the minimum value of distance measure from corresponding pixel to centroid.

The k-means function in MATLAB has following distance measures with name -'Distance' and values - 'sqeuclidean', 'cityblock', 'cosine', 'correlation' and 'hamming'.

3. Up-dation of centroid values by taking mean of pixels belonging to cluster generating new centroids.
4. This process is repeated until there is no change in old and new centroid values or by specifying maximum number of iterations in kmeans function using name -'MaxIter' and value - number of iterations (numeric value).

The kmeans function in MATLAB returns cluster indices, centroid locations, distances from pixel to centroid and sum of distances from pixel to centroid within cluster. To know the information how given image is segmented into clusters, draw silhouette plot using the cluster indices returned from kmeans function. The silhouette plot displays a measure of how close each pixel in one cluster is to points in the neighboring clusters. The silhouette ranges from -1 to +1. +1 indicates pixels are assigned perfectly to one cluster and -1 indicates wrong assignment of pixels to cluster. This measure is calculated using silhouette function in MATLAB with three parameters, input image, cluster indices returned from kmeans function and distance measure.

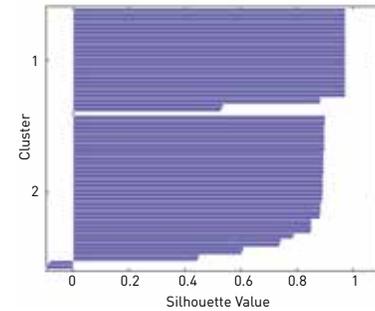
The implementation of kmeans algorithm in MATALB on gene spot is shown below with hg1 as input single spot image shown in figure 2 gridded from the microarray image using method presented in [2,4] and image from Stanford microarray database [3]. The silhouette plots for the kmeans function with different distance

► TECHNICAL TRENDS ►►►

measures are shown below.

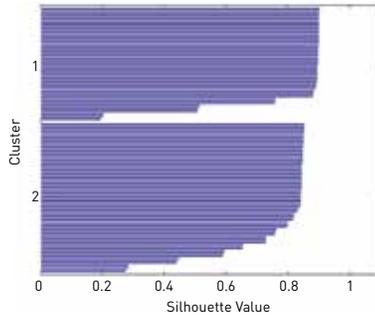
```

i1=imread('hg1.jpg')
figure,imshow(i1);
i2=rgb2gray(i1);
figure,imshow(i2);
[id11,C1]=
kmeans(double(i2),2,'Distance','sqeuclidean');
[silh2, h]=silhouette(double(i2),
id11,'sqeuclidean');
h=gca; h.Children.EdgeColor=[0.8 0.8 1];
xlabel 'Silhouette Value'
ylabel 'Cluster'
    
```



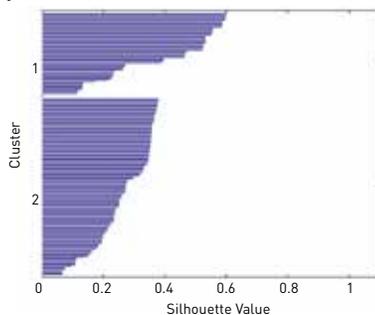
```

[id12,C2]=
kmeans(double(i2),2,'Disance','cityblock');
[silh2,h]=silhouette(double(i2),id12,'cityblock');
h=gca; h.Children.EdgeColor=[0.8 0.8 1];
xlabel 'Silhouette Value'
ylabel 'CLuster'
    
```



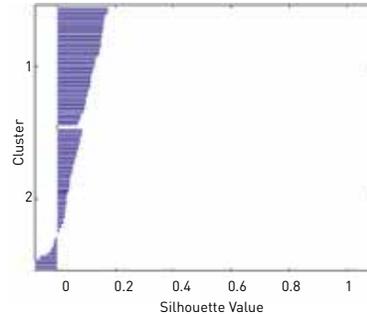
```

[id13,C3]=kmeans(double(i2),2,'Start',
'Distance','cosine');
[silh2, h]=silhouette(double(i2), id13,'cosine');
h=gca; h.Children.EdgeColor = [0.8 0.8 1];
xlabel 'Silhouette Value'
ylabel 'Cluster'
    
```



```

[id14,C4]=
kmeans(in2bw(i2),2,'Distance','hamming',
'MaxIter', 80);
[silh2, h]=silhouette(double(i2),
id14,'hamming');
h=gca; h.Children.EdgeColor = [0.8 0.8 1];
xlabel 'Silhouette Value'
ylabel 'Cluster'
cluster(i)=mean(silh2);
    
```



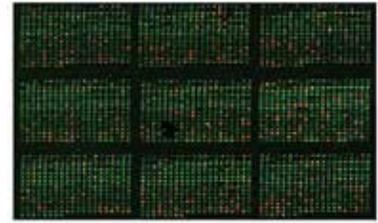
The efficient way to compare the performance of kmeans clustering with different functions is done by calculating the mean of silhouette values. The larger mean value means better segmentation. The mean of silhouette values for the above functions executed on single spot image shown in figure 2 is shown in table 1.

```

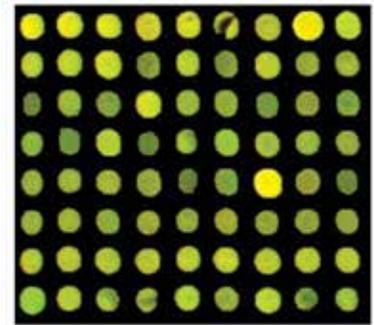
i=1;
[id12,C]=kmeans(double(i2),2,'Distance','sqeuclidean');
[silh2, h]=silhouette(double(i2), id12, 'sqeuclidean');
cluster(i)=mean(silh2);
i=i+1;
[id12,C]=kmeans(double(i2),2,'Distance','cityblock');
[silh2, h]=silhouette(double(i2),id12,'cityblock');
cluster(i)=mean(silh2);
i=i+1;
[id14,C]=kmeans(im2bw(i2),2,'Distance','hamming','MaxIter',
80);
[silh2, h]=silhouette(double(i2), id14, 'hamming');
cluster(i)=mean(silh2);
    
```

Table 1: Silhouette values with different distance measures

Distance measure	Silhouette value (mean)
Sqeuclidean	0.8534
City Block	0.7847
Cosine	0.4224
Hamming	0.0735



Sub-gridding



Spot-detection



Single spot



Segmented using k-means

Figure 2: Single spot Extracted from microarray image using gridding process

Spot information is obtained by calculation of Expression Ratio in the region of every gene spot given by.

$$ExpressionRatio = \log_2 \frac{R}{G}$$

Conclusions

This article focus on implementation of k-means clustering algorithm for segmentation of

microarray image. Several algorithms such as Histogram and thresholding, region based segmentation, edge detection etc., are used for microarray image segmentation. But clustering algorithms are more efficient in segmentation of this images. Clustering algorithms has the advantages over other methods such as non-dependency of shape of spot, does not require any prior knowledge of the image objects and sensitivity to noisy pixels. This article shows different parameters used in implementing kmeans function in MATLAB. Based on the silhouette values, we can select best distance measures and best mechanism in initializing centroids in implementing kmeans function in MATLAB. From the table 1, we can understood that kmeans clustering with sqeuclidean distance got better segmentation. We have implemented with number of clusters equal to two, as microarray spot contains two regions, spot area and background. This can be extended to any number of clusters for other images.

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Fast food chain analysis with Based on Ensemble Classifier and different data mining classifier

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Building up a crusade for an eatery establishment, need to achieve new clients, ensure your regulars think about the new offers and keep the battle in accordance with brand models and directions. It's an ordinary test that, when done right, can prompt a radical new gathering of people of hungry clients strolling through your entryways, attracted by offers and advancements for executed dependent on experiences and get an assortment of information are expanding every day in the field of junk food utilize. Presently, The information mining gives heaps of system to mine information in a few fields, the strategy of mining as affiliation rule mining, grouping procedure, order method and developing procedure, for example, called outfit characterization strategy. The procedure of gathering classifier expands the order rate and enhanced the greater part casting a ballot of grouping system for individual characterization calculations, for example, KNN and bolster vector machine. The new ideal models of gathering classifier are bunch situated group system for characterization of information. Investigation worldview discover the precision result spoken to by when utilizing gathering Bag tree which is given after prepared the dataset of 548 perception and get by and large exactness 100% and less mistake rate i.e 0.4% correlation with SVM(85.4% by and large exactness and blunder rate is 14.6%) and k-NN (87.6% generally exactness and blunder rate is 12.4%)classifiers

Keywords: Data mining; Classification Methods, k-NN, SVM and Ensemble Classification

1. Introduction

This exposition applies arrangement continue dependent on classifier choice to drive-thru food information and propose a bunching based classifier determination technique. In the strategy, numerous groups are chosen for a gathering procedure. At that point, the standard introduction of every classifier on those groups is determined and the classifier with the best normal execution is arranged the given information. In the calculation of ordinary exercises, the weighted normal is system is utilized. Weight esteems are determined by the separations between the given information and each chosen group. There are commonly two kinds of different classifiers mix: numerous

classifiers choice and various classifiers combination. Various classifiers choice accept that every classifier has the ability in some nearby districts of the element space and endeavors to discover which classifier has the most astounding neighborhood precision in the region of an obscure test. At that point, this classifier is named to settle on an official choice of the framework.

Execution of a classifier is every now and again the most vital part of its esteem and is estimated utilizing an assortment of surely understood technique and the lattice is utilized. Then again information of a classifier is regularly regarded as less critical or even dismissed. Notwithstanding, it is crucial for the clients of the classifier

as they trust it progressively on the off chance that they can understand how the classifier functions and on the grounds that extra learning about the relations in watched information can be extricated by an included classifier. Subsequently, a portion of the old techniques center around information of scholarly classifiers or changing non-learning classifiers into the human-learning structure. There is an absence of calculations that treat exactness and learning of classifiers as consistently critical, changing over the space of building a classifier into a heuristic enhancement emergency. Such calculations are particularly essential in areas where there are parts of trait space that can be arranged

with high precision utilizing proficient classifier and parts that require no-information classifiers to accomplish required grouping exactness.

The way toward joining diverse bunching yield (group outfit or bunching Aggregation) developed as an elective methodology for enhancing the nature of the Results of bunching calculations. It depends on the achievement of the mix of regulated classifiers. Given an arrangement of articles, a bunch outfit technique comprises of two vital advances: Generation, which is about the making of an arrangement of parcels an of these items, and Consensus Function, where another segment, which is the combination of all segments acquired in the ageing step, is registered. Over the previous years, many bunching troupe strategies have been proposed, bringing about better approaches to confront the issue together with new fields of use for these procedures. Other than the introduction of the fundamental strategies, the presentation of the scientific classification of the diverse propensities and basic correlations among the techniques is extremely essential with the end goal to give a viable application to a study. In this way, because of the significance that bunching outfits have picked up confronting group examination, we have made a basic investigation of the diverse methodologies and the current techniques. We exhibit the algorithmic utilization of the arrangement method by broadening SVM the most mainstream double order calculations. From the investigations over, the way to enhance bunch situated classifier is to enhance parallel arrangement. In the last piece of the theory, we incorporate an exact assessment that goes for understanding twofold arrangement better with regards to outfit learning.

Group and arrangement assume a critical job in information mining and machine learning worldview. The assessment of group classifier is an extraordinary favorable position over twofold and customary classifier. The procedure of model grouping is consolidated at least two strategies with a similar nature. The model arrangement of information gets some type of group situated gathering

classifier. The need and necessity of the online exchange of information is stream arrangement, because of stream characterization spare the season of calculation and capacity zone of the system. With the end goal of the stream information arrangement different machine learning calculation is utilized, for example, grouping, order, and neural system. In the arrangement procedure of a developing information stream, likewise the impermanent or long-standing exercises of the stream might be more critical, or it regularly can't be referred to from the earlier with respect to which one is more essential. We choose the window or skyline of the preparation information to utilize in order to get the best arrangement exactness. For the best possible determination of window and skyline utilized outfit classifier with the help of bunching strategy. In outfit techniques, the primary system is to keep up a dynamic arrangement of classifiers.

2. Related work

Brijesh Verma and Ashfaqr Rahman entitled "Group-Oriented Ensemble Classifier: Impact of Multi-bunch Characterization on Ensemble Classifier Learning" a novel bunch arranged gathering classifier is displayed [1]. For order, choices of combination in the troupe are joined, for the most part with a bunch conspire [10]. The upside of group outfits over single classifiers in the information stream arrangement issue has been demonstrated exactly and hypothetically [1, 3]. Be that as it may, few troupe strategies have been intended to think about the issue of repeating settings [6, 7]. In particular, in issues where ideas re-happen, models of the troupe ought to be kept up in memory regardless of whether they don't perform well in the most recent bunch of information. Also, every classifier ought to be had some expertise in a one of a kind idea, implying that it ought to be prepared from information having a place with this idea and utilized for characterizing comparative information. In [9, 12], a strategy that distinguishes ideas by gathering classifiers of comparative execution on explicit time interims is depicted. Anne-Laure Brianne-Bernard, Fares Menasri, Rami Al-Hajj

Mohamad, Chafic Mokbel, Christopher Kermorvant, and Laurence Likforman-Sulem an investigation of building a proficient word acknowledgment framework coming about because of the blend of three penmanship recognizers as building an effective word acknowledgment framework coming about because of the mix of three penmanship recognizers [11]. Nayer M.Wanas, Rozita A. Dara and Mohamed S. Kamel entitled an examination of Adaptive combination and co-agent preparing for classifier troupes [2] as gatherings are structured so that every classifier is prepared autonomously and the choice In example arrangement, various classifier frameworks are regularly considered a reasonable and powerful answer for troublesome acknowledgment issues combination is executed as a post-process module. Leo Breiman entitled a Bagging indicator [3] as a technique for producing a different form of an indicator and utilizing these to get an amassed indicator. The collection midpoints over the adaptation while foreseeing a numerical result and completes a majority vote while anticipating a class. The numerous renditions are framed by making bootstrap replication of the learning set and utilizing these as new learning sets. Yoshua Bengio entitled Learning Deep Architectures for AI [4] as Theoretical outcomes recommend that with the end goal to take in the sort of muddled capacities that can speak to abnormal state deliberations (e.g., in vision, dialect, and other AI-level assignments), one may require profound designs. Profound learning techniques go for taking in highlight chains of importance with highlights from more elevated amounts of the pecking order shaped by the creation of lower-level highlights. Giorgio Fumera, Fabio Roli and Alessandra Serrau entitled Analysis of Bagging [5] as a Linear Combination of Classifiers as applying an explanatory system for the investigation of straightly consolidated classifiers to gatherings created by stowing. Albert Hung-Ren Ko and Robert Sabourin entitled an Implication of Data Diversity for a without classifier Ensemble Selection in Random Subspaces [6] as Ensemble of Classifiers (EOC) has been indicated

compelling in enhancing the execution of single classifiers by consolidating their yields. Zhihui Lai, Zhong Jin, Jian Yang, and W.K Wong entitled real inconveniences of the straight dimensionality decrease calculations [7] as Principle Component Analysis (PCA) and Linear Discriminant Analysis (LDA), are that the projections are direct mix of all the first highlights or factors and all weights in the straight mix known as loadings are ordinarily non-zero. The low-dimensional portrayal of high-dimensional information is a critical issue in numerous application fields. Juan J. Rodriguez and Jesus Maudes entitled a technique for the development of classifier outfits called boosting [8] as Boosting is an arrangement of strategies for the development of classifier gatherings. The differential element of these strategies is that they permit acquiring a solid classifier from the mix of powerless classifiers. Oriol Pujol and David Masip entitled outfits Toward a Structural Characterization of the Classification Boundary [9] as a novel twofold discriminative learning system dependent on the guess of the nonlinear choice limit by a piecewise direct smooth added substance show. The choice outskirts is geometrically characterized by methods for the portraying limit indicates that have a place the ideal limit under a specific thought of vigor. Nandita Tripathi, Stefan Wernter, Chihli Hung, and Michael Oakes entitled a procedure utilizing the greatest hugeness incentive to recognize a semantic subspace [10] as Subspace identification and handling is accepting more consideration these days as a technique to accelerate the inquiry and diminish preparing overburden. Subspace Learning calculations endeavor to identify low dimensional subspaces in the information which limit the intra-class partition while boosting the between-class division. Subspace learning strategies are thusly these days being progressively explored and connected to web record grouping, picture acknowledgment, and information bunching. Terry Windeatt entitled a portray a proportion of MLP Classifier Design [20] as it is equipped for foreseeing the quantity of classifier preparing ages for accomplishing ideal

execution in a troupe of MLP classifiers. The measure is registered between sets of examples on the preparation information and depends on a ghastly portrayal of a Boolean capacity. Dacheng, Tang, Xiaoou, Li, Xuelong, Wu and Xindong entitled "Topsy-turvy stowing and arbitrary subspace for help vector machines-based pertinence input in picture recovery" another filter kilter packing and irregular subspace system are planned [23]. Rich Caruana, Alexandru Niculescu-Mizil, Geoff Crew and Alex Ksikes entitled "Outfit Selection from Libraries of Models" a technique for building gatherings from libraries of thousands of models is introduced [24]. Sandrine Dudoit and Jane Fridlyand entitled "Stowing to enhance the exactness of a bunching technique" a use of sacking to group examination is proposed [47]. Stowing can considerably enhance grouping precision and yields data on the exactness of bunch assignments for individual perceptions. Nikunj C. Oza and Kagan Tumer entitled "Classifier Ensembles: Select Real-World Applications" classifier outfits and group applications are displayed [26]. Robert E. Banfield, Lawrence O. Lobby, Kevin W. Bowyer and W.P. Kegelmeyer entitled "A Comparison of Decision Tree Ensemble Creation Techniques" Randomization-Based strategy for making a gathering of classifiers is proposed [27]. Groups are then doled out to classifiers as per execution on the most recent bunch of information. Forecasts are made by utilizing weighted averaging. In spite of the fact that this procedure fits extremely well with the repetitive settings issue, it has a disconnected advance for the disclosure of ideas that isn't reasonable for information streams. Specifically, this system will most likely be wrong with ideas that did not show up in the preparation set.

3. Proposed information mining application

Today, extraordinary working environments facilitate remedial associations data using government managed savings information system; as the structure contains a goliath extent of data, used to expel anchored information for making the sharp restorative end. The standard focus of

this examination is to make brilliantly. To develop this framework, for the request of convenient applications customer Market Id and there Age of Stores, for instance, we have taken dataset from IBM WA_Fn-UseC_Marketing-Campaign-Eff-UseC_FastF.csv open space The data mining request systems viz. Bolster Vector machine, K-NN and Ensemble Classification pack Tree are used. In this respects, employments of the Market crusade the representations to drive the following effort to significantly more amazing returns by utilizing what found out about the connection between's promoting effort focusing on dependent on the perfect gathering of people estimate are distinguished.

4 Data Source

The drive-thru food chain database comprises of 548 records. The informational index comprises of 7 sorts of qualities: Input characteristic which is recorded beneath.

Trait Information:

Meta traits:

1. Market ID
2. Market Size
3. Location ID
4. Age of Size
5. Promotion
6. Week
7. Sales in Thousands

5. Research Methodology

We utilize machine learning (ML) to consolidate the four strategies and through a quantitative assessment demonstrate that the mix of the four systems beats the execution of every individual procedure. In this exploration paper, [28]Data mining procedure assumes an indispensable job in getting the outcome exactness. Information mining method has bunches of Machine learning and scientist takes their points of interest and speaks to profoundly exactness. Information mining mine the organized and unstructured information. Information mining have heaps of strategies, for example, Support Vector Machine, K-Nearest Neighbor, and Ensemble Classifiers

Various information mining instruments are in the market and the analyst takes their advantages. in this paper utilizing an information

mining device named Matlab. That is Graphical User Interfaces UI and simple to learn and utilize. Matlab information mining apparatus gives a considerable measure of offices to foresee or get the exact outcome. Matlab gives organized and unstructured information mining process so that the specialist effectively finds their precise outcomes or 100% exactness.

5.1 Training DataSet

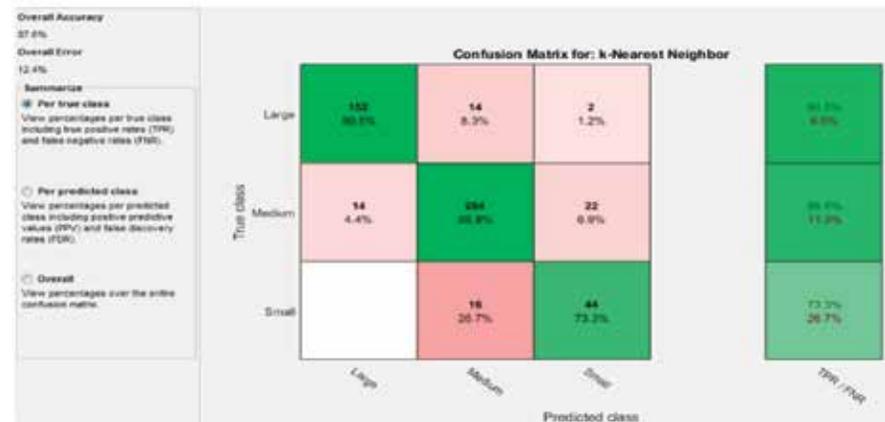
```
function [trainedClassifier,
validationAccuracy] =
trainClassifier(trainingData)
% trainClassifier(trainingData)
% returns a trained classifier and its
% validation accuracy.
% This code recreates the
% classification model trained in
% Classification Learner app.
% Input:
% trainingData: the training data of
% the same data type as imported
% in the app (table or matrix).
% Output:
% trainedClassifier: a struct
% containing the trained classifier.
% The struct contains various fields
% with information about the
% trained classifier.
% trainedClassifier.predictFcn: a
% function to make predictions
% on new data. It takes an input of the
% same form as this training
% code (table or matrix) and returns
% predictions for the response.
% If you supply a matrix, include only
% the predictor's columns (or
% rows).
% validation Accuracy: a double
% containing the validation accuracy
% score in percent. In the app, the
% History list displays this overall
% accuracy score for each model.
% Use the code to train the model
% with new data.
% To retrain your classifier, call the
% function from the command line
% with your original data or new data
% as the input argument trainingData.
% For example, to retrain a classifier
% trained with the original data set
% T, enter:
% [trainedClassifier, validation
% Accuracy] = trainClassifier(T)
% To make predictions with the
% returned 'trainedClassifier' on new
% data T,
```

```
% use
% yfit = trainedClassifier.predictFcn
% (T)
% To automate training the same
% classifier with new data, or to learn
% how
% to programmatically train
% classifiers, examine the generated
% code.
% Auto-generated by MATLAB on 17-
% Jan-2016 12:25:27
inputTable = trainingData;
% Extract predictors and response
% This code processes the data into
% the right shape for training the
% classifier.
predictorNames = {'MarketID',
'LocationID', 'AgeOfStore',
'Promotion', 'Week',
'SalesInThousands'};
predictors = inputTable(:,
predictorNames);
response = inputTable.MarketSize;
% Train a classifier
% This code specifies all the classifier
% options and trains the classifier.
classificationEnsemble =
fitensemble(...
predictors, ...
response, ...
'Bag', ...
30, ...
'Tree', ...
'Type', 'Classification', ...
'ClassNames', {'Large',
'Medium', 'Small'});
trainedClassifier.
ClassificationEnsemble =
classificationEnsemble;
extractPredictorsFromTableFcn = @(t)
t(:, predictorNames);
predictorExtractionFcn = @(x) extractPr
edictorsFromTableFcn(x);
```

```
ensemblePredictFcn = @(x)
predict(classificationEnsemble, x);
trainedClassifier.predictFcn = @(x) ens
emblePredictFcn(predictorExtractionF
cn(x));
inputTable = trainingData;
% Extract predictors and response
% This code processes the data into the
% right shape for training the
% classifier.
predictorNames = {'MarketID',
'LocationID', 'AgeOfStore', 'Promotion',
'Week', 'SalesInThousands'};
predictors = inputTable(:,
predictorNames);
response = inputTable.MarketSize;
% Perform cross-validation
partitionedModel =
crossval(trainedClassifier.
ClassificationEnsemble, 'KFold', 5);
% Compute validation accuracy
validationAccuracy = 1 -
kfoldLoss(partitionedModel, 'LossFun',
'ClassifError');
% Compute validation predictions and
% scores
[validationPredictions, validationScores]
= kfoldPredict(partitionedModel);
```

6. Results Analysis (Visualization)

In this exploration paper taken SVM k-NN and Ensemble Bag tree strategies for investigation the dataset which have 7 nos of occurrences and there 548 information which connect to one another, when utilizing Matlab information digging programming for preparing the dataset where showcase Id , area Id , time of Store ,advancement ,week and deals in thousands and goes through SVM,k-NN and Ensemble Bag tree information that grouped and get exactness rates



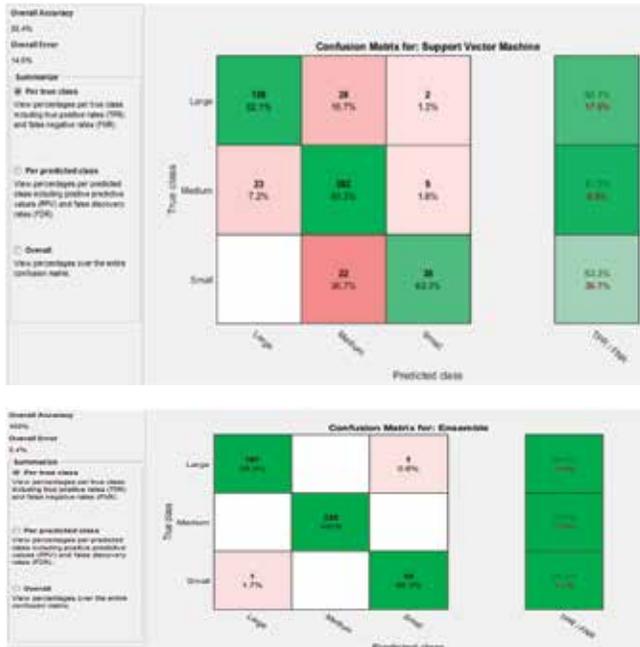


Fig. 1: Confusion Matrix for three Methods-SVM,k-NN and Ensemble Classifiers

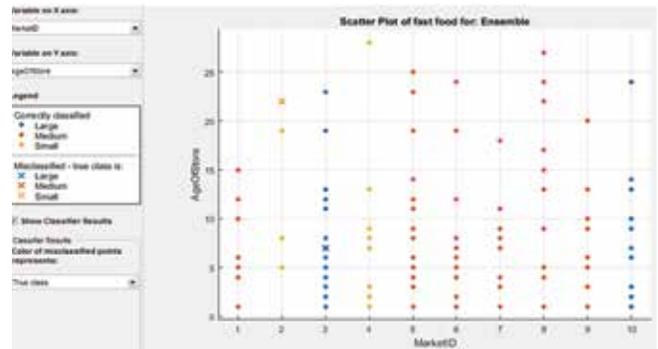
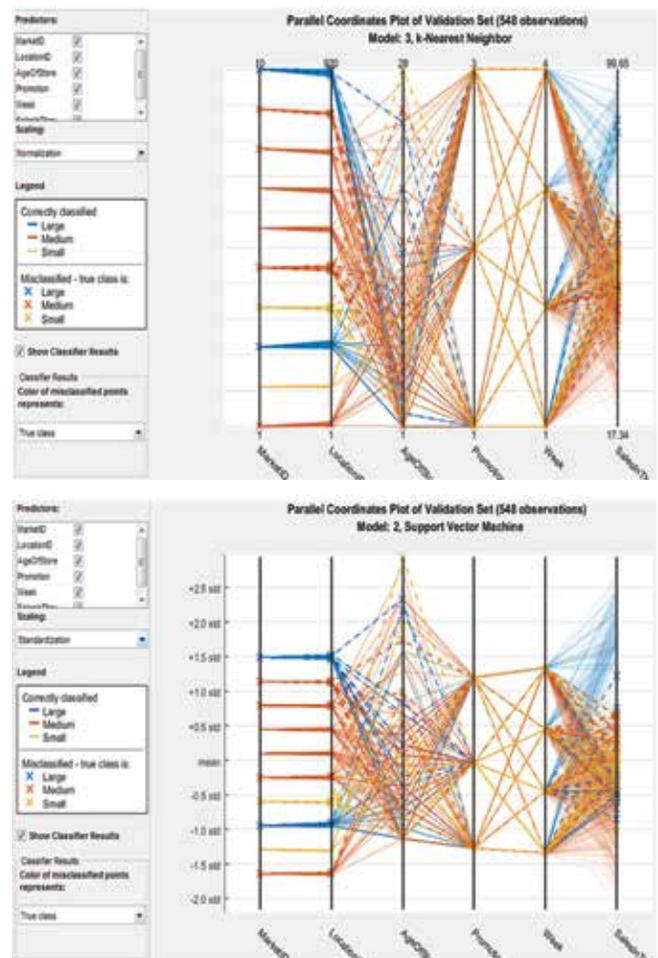
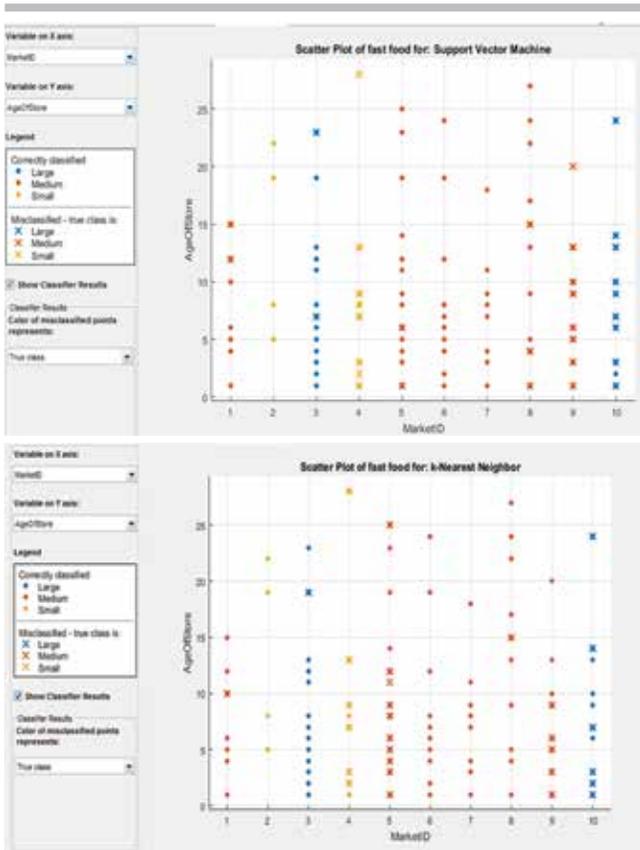


Fig. 2: Scatter Plot of fast Food for three methods-SVM, k-NN and Ensemble Classifiers



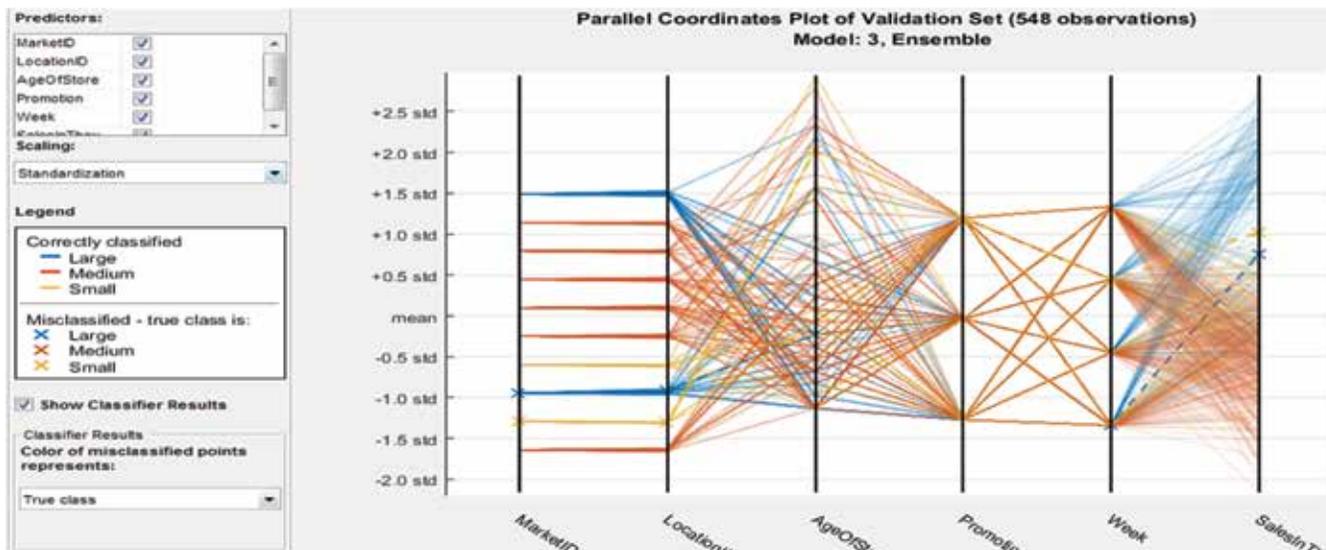


Fig. 3: Parallel Coordinates Plot of validation Set (548 observation Model-1, 2, and 3)

6. Conclusion and Future Scope

In this paper, we used a couple of course of action procedures used to expel and inspect dataset from compact applications. Specifically, we analyzed the systems, which are open to portray the Market Id and time of Stores... The portrayal incorporates into data plan in light of complete the process of getting them ready to test. It also expects a fundamental part in information recuperation and isolating accommodating information from an epic proportion of convenient applications. There is n number of computations and procedures are available for incorporate extraction and portrayal. We have taken three methods for request i.e. Bolster Vector Machine, K-Nearest Neighbor and gathering classifiers As demonstrated by these strategies The new standards of group classifier are bunch situated troupe strategy for the arrangement of information. Examination worldview discover the exactness result spoken to by when utilizing group Bag tree which is given after prepared the dataset of 548 perception and get by and large precision 100% and less blunder rate i.e 0.4% correlation with SVM(85.4% generally speaking exactness and mistake rate is 14.6%) and k-NN (87.6% in general precision and blunder rate is 12.4%)classifiers achieve as the regard connection with another two procedures

are used to be explicit SVM and kNN. Now the machine adapting High lady of the hour gathering strategy might be taken as strategies and get resultant for the future angle. Outfit strategy has extensively utilized in information mining strategies. numerous analysts have taken in their machine learning and get their outcomes..

7. References

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Remote Logger – Simplifying Message Monitoring

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Introduction

To get an exposure to the development environment software developers writes, compile and execute the program for the understating of the syntax, tool-chain, and the platform. Beginners using C language usually start programming with simple programs using printf function which is a standard input/output library function for displaying output on the console. In C programming printf is generally used in the programs for displaying run-time messages, showing results and sometimes to express the sequence of execution. In many situations, it is also used as a basic tool for problem troubleshooting that helps to understand the flow of the program and to verify the outcome. It can be undoubtedly assumed that printf is a function used by programmers at various stages of the program for many purposes.

Formally, it is the function that writes formatted output to the standard output stream, in other words it format and produce output. To get an idea of a function, the prototype is the key that specifies the function name, parameter type, and return type. So, in order to understand printf function, it is desirable to look into its prototype. The prototype of printf, as shown below clearly indicates that it is a variable arguments function and requires the string as the first parameter specifying formatting to be used, the remaining parameters if any specifies the value to be written. In the simplistic case, the function takes only one argument that is the character string to be printed. On success, the function returns the number of the character printed while a negative value is returned if an error is encountered. If we look, how to use this function in a program, a header file stdio.h is included in the program that

tells the compiler to include information about standard input/output (stdio) library.

*prototype : int printf(const char *format, ...);*

For example, on execution following program produces the output:

Print Hello

```
#include <stdio.h>
int main()
{
    printf("Print Hello\n");
    return 0;
}
```

Above program prints output on the local console, in this article, we discuss and elaborate a simple technique to print the output on the console of the remote machine and this can be easily by the programmers in their programs.

Remote message monitoring:

Programs are written to perform a specific task. The complexity and duration of the execution of the program relate to the purpose of the program. Execution time of some of the programs is small and results are displayed immediately, for such programs user or the programmer can easily monitor the outcome locally. But there are applications of continuous nature that continuously produces output messages or displays monitoring information at regular intervals and sometimes generates the output based on events. This involves user to check these messages regularly on the local console which restrict the freedom of the user. Sometimes it becomes arduous to regularly monitor the console of executing machine because it needs a person to be engaged in the job of observation only. This situation becomes more undesirable especially when machine running the software

is installed at some uncomfortable location. In such a situation, it becomes desirable to extend the output of the printf message to remote machines as per the convenience. For this, if the run-time outcome of printf messages from the executing machine could be diverted to the console of the remotely located programmer or to an observer working in another room at different location; it would become convenient to monitor these messages even while doing other work also. It may also be noted that writing outcome to a file can also be a choice for analyzing the logs at some later time. But when we want instant monitoring, remote message print is a good choice. In this context, remote message print or remote printing means to display run-time output messages at the console of remote machine as illustrated in Fig. 1.

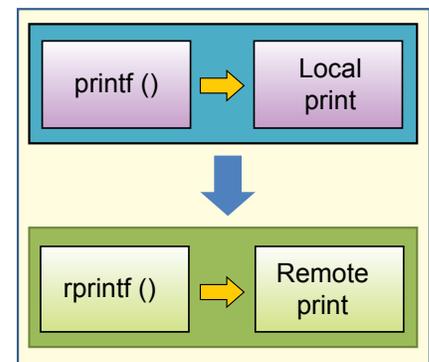


Fig. 1 : Local and remote message print logical illustration

If we take a look into the applications of this concept, the straightforward application is extending message to a convenient location, another vibrant application of this technique lies in an embedded environment, where, in most of the situations there is no directly attached display, and so remote

message print can be really useful to extend the messages. In the following section, we will explore the approach to extend the message remotely for providing the freedom and flexibility to users.

Remote message logging:

Conceptual view of the notion is shown in figure 2. By using this concept, utility software can be easily built to print output on the remote machine as explained below. There are three basic building blocks to display run-time messages at the remote console. Subsequently, we will discuss all the three components.

- A. Proposed function (rprintf) analogous to printf to accept and format data for the remote print
- B. Sender to assist in sending formatted data remotely (communicator)
- C. Receiver to receive and print data (rlogger)

A. rprintf:

The first building block is the function rprintf. This function takes one or a number of arguments. In terms of arguments, it is similar to printf in order to match the exact compatibility of the parameters.

prototype: `int rprintf(const char *fmt, ...);`

The logic behind the function implementation is to take the data from the values passed to the function then format this data accordingly and finally send it to the remote. To achieve this, there may be many style and strategy for implementation. In the following approach, the function starts with a check to verify the initialization of sending dependency which is a datagram socket to send data at a remote machine. If this initialization is not already committed, the function does the socket initialization; this has been elaborated in the subsequent section. The next step is to allocate sufficiently large string to place the formatted data. Once memory space is allocated to hold the data then `vsnprintf`, a function of the printf family is used to store data in a formatted manner in the allocated space [1]. The concept here is that if the first guess of size to assign the buffer memory is not big enough to hold data that can be verified by the

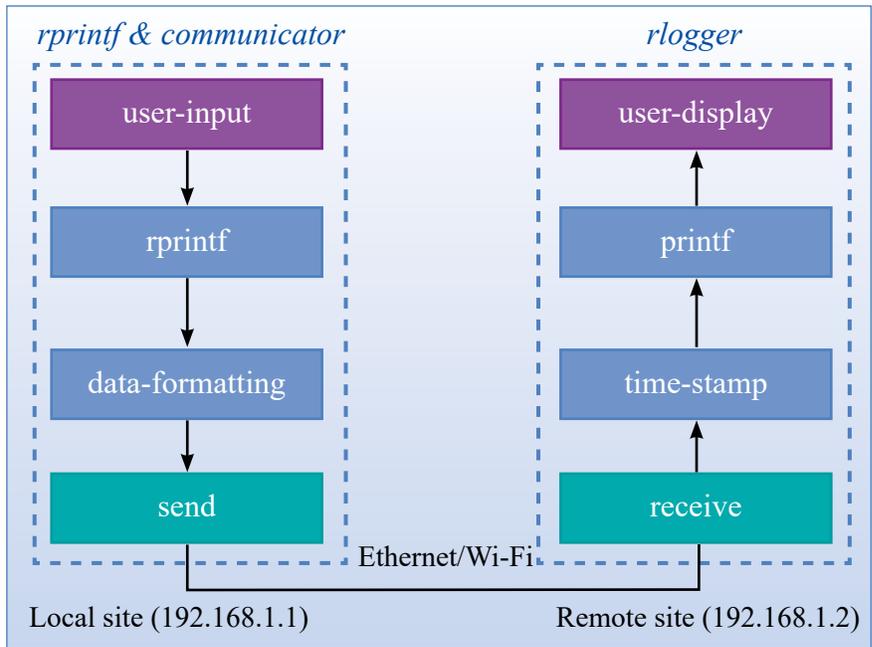


Fig. 2 : Conceptual view of remote message print

return value of `vsnprintf`, increment size linearly to reallocate buffer so that data could be fitted well in to it and finally formatted buffer is sent for remote printing using socket.

/===== Partial pseudo code for rprintf =====*/*

```
//socket initialization and variable declaration
check socket init flag
do socket initialization one-time only
int size = 100; // Initial buffer size assumption
char *buffer ; // Buffer to hold formatted data
va_list ap; // Variable argument list
```

```
// Try to format in the allocated buffer space
va_start(ap, fmt);
n = vsnprintf(buffer, size, fmt, ap);
va_end(ap);
```

```
// on success return value is non-negative & less than buffer size
if (n > -1 && n < size)
    all good, send buffered data to remote & done
else
    increment size, re-allocate buffer & repeat again
/*=====
```

=====/*

B. Communicator:

The second element is the sender which is an assisting module for rprintf. It is based on UDP (user datagram protocol) transport protocol. It has two stages first is the initialization which is invoked only once and the second is the sending routine that is called as frequently as needed. In the process of socket initialization, first a UDP socket is created then optionally socket option is set to allow reuse of the local address then the socket is bind to the local address. Then it comes the imperative part where we need to specify the unique identification of the receiving entity that is finally going to print these messages and this identification is the combination of IP address and port number. Here remote port specifies the logical port number where the corresponding remote print receiver is supposed to listen and the IP address is the network address of receiving-machine. Once this basic socket setup has been done, a flag is set to make sure that the same process does not iterate later on. Finally in order to send the message to remote destination `sendto` call of the socket is used in which parameters in the form of message buffer, length of the message and the remote address specification

are passed.

C. Rlogger:

The final component, we call it remote logger (rlogger) utility is the user interface at the remote side. It executes at remote machine and does the task of receiving and displaying the message. It basically receives the formatted messages over UDP socket and prints these messages on the console. If we take a look at the insight of rlogger program, it is a socket receiver using printf function to display messages. To implement it, a socket compatible with the sender needs to be created, for it, we need to create a UDP socket and set the re-usability option. At the time of binding, it has to be ensured that we are using the bind port as mutually agreed with sender because the receiver must be listening on the port at which sender is supposed to send the data. Once it is done receiver should be in the ready state to peruse the intended data. Next, for receiving and managing data, it allocates the appropriate amount of buffer to hold the data and use the receive system call to get the formatted data being pushed by the sender. Finally, this data can be printed on the console. In order to give the impressive flavor, a time-stamp could be prefixed with each message. This time-stamping can be very useful, as later on you can easily correlate the messages according to time-stamp that might help in examining the content of the message. Timings also help to demarcate and signify the similar type of message. In order to use the rlogger utility, simply execute the binary on the console. It is advisable to copy the executable in the directory which is the part of system path directory e. g. /usr/sbin. So that user could use it by entering the rlogger command on the terminal without mentioning full path of executable.

```
/*===== code to update current time
in a buffer =====*/

// timer a variable of time_t type
time(&timer);
tm_info = localtime(&timer);
// Update hour, minute, second in
buffer
```

```
strftime(buffer, 25, "%H:%M:%S",
tm_info);
/*=====
=====*/

/*===== pseudo code for rlogger
utility =====*/

create datagram socket
set reuse option
update local info
bind to listen port
allocate the buffer to receive
display a welcome message with time
repeat
    receive formatted data
    optionally prefix time-stamp
    print data
until interrupt or break stream
/*=====
=====*/
```

Deployment:

Now let's discuss the final contrivance for the systematic deployment of this complete utility as illustrated in figure 3. At the sending side, one header file and a library are required and an executable for the remote side. This header file contains the declaration of rprintf and the corresponding source file contains the definition of rprintf along with socket related stuff. For smooth deployment, it is suggested to create a library from the source file that could be distributed along with header file while at remote side receiver executable could be deployed. The steps to create the library from the source file are summarized as follows.

//create an object file from the source

```
file
g++ -c rprintf.c

//create the static library from the
object file
ar rc librprintf.a rprintf.o
ranlib librprintf.a
```

How to use the utility:

To use rprintf in your applications include rprintf.h in your project. You may also need to specify the path of the header file with -I option so that compiler could locate it. Alternatively, keep a local copy of the file and use double quote to include it. But always keeping a local copy does seem to be elegant, so simply copy this header file in /usr/include directory that will make it accessible to your program and local copy or explicit include option would not be required. While linking the created library to a project, specify the library either under the setting of linker section of the properties of your IDE (integrated development environment), while for using with command line specify it with following options i.e. -L for the path to the library files and -l to link a library. If you do not want to specify library path, copy library inside /usr/lib. Command line option is illustrated below to compile and link an example source file.

```
g++ -o exe source.c -L/<path to library>
-lrprintf
```

At remote site copy receiver executable e. g. rlogger in /usr/sbin and execute the command at the terminal.

Following program uses rprintf and prints a message *Remote Print Hello* at the remote console

```
#include <stdio.h>
```

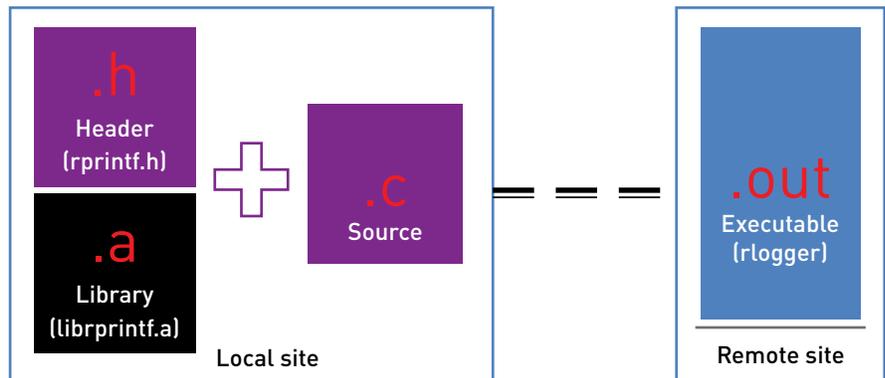


Fig. 3 : Soft components deployment scenario

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```
#include "rprintf.h"
int main()
{
    rprintf("Remote Print Hello\n");
    return 0;
}
```

Conclusion:

Remote printf concept introduced

in the article provides the ease to the programmers and users to monitor the run-time outcome of the program at their preferred remote locations as per the convenience. Necessary steps from concept to implementation have been covered so that enthusiastic programmer could try this. The main

fascination lies in the prototype of the function which is exactly same as of printf that offers convenient switching between local and remote display of messages.

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Fifth State Level CSI Technical Symposium OVERLOAD++

26 October 2018



Group photo of dignitaries, faculty and event coordinators during the valedictory function of fifth CSI Technical Symposium OVERLOAD++ held on 26th October at HKBK College of Engineering, Bengaluru.

HKBK College of Engineering, Bengaluru

Region - V

The events conducted were Code-O-Fiesta (Code Debugging), InQuizitive (Technical Quiz), Jumanji (Treasure Hunt), Snap Byte (Photography), Tech Mish Mosh (Technical Collage), Code Wars, NFS PC Gaming, Counter Strike PC Gaming, PUBG Mobile Gaming, Beg borrow steal, Xception (A Mock Placement Selection Event) & Engineering Eye.

The symposium had a total of around 800 participations from different colleges. The symposium closed with a grand Valedictory function, certificate and prize distribution ceremony.

Insight into Databases through SQL to NoSQL

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A database is a collection of records that is organized in such a way that it can be easily accessed, managed and updated for use in analysis or decision process making process. The large scale educational organizations and I. T. companies have to keep record of everything and need updating and manipulating their records on daily basis. Use of database makes their work faster to search records about any people or product that brings effectiveness in their work. Hence, use of databases has become need of I.T. industry today. This article shows importance of databases over traditional file handling, application areas in day to day life where databases are essentially used, Evolution of databases through SQL to NoSQL, comparative of SQL and NOSQL databases and classification of NoSQL databases. Finally article presents sample queries with SQL and NoSQL databases.

Why databases are more preferred than traditional files?

Traditionally, files were used for maintaining information, updating, searching, deletion and preparing reports. However, databases have many advantages over traditional files as follows.

- i. Using databases it is easy to control data redundancy.
- ii. Databases provide strong data security restricting unauthorized access.
- iii. Data replication is easy with databases with compared to traditional files.
- iv. Data recovery during system crash is easy.
- v. Databases can be easily shared.
- vi. It is easy for storage and access standards with databases.
- vii. Integrity can be enforced which is

- viii. difficult to maintain with files.
- ix. Inconsistency can be avoided.
- x. Assigning rights and privileges can be easily controlled through centralized administration.
- xi. Minimization of cost of developing and maintaining database oriented system.
- xii. Concurrency control with parallelism can be achieved with databases resulting better efficiency and reducing response time.
- xiii. It is easy to maintain different views of data like user view, programmer view and administrator view of database.

Application Areas of Databases

Now a day almost in each area of life where digitalization is used, databases are efficiently used. Following are some candidate applications where databases are used in specific application automation

- i. Bus/Railway/Airlines Reservation Systems
- ii. Library/Hospital/Medicine Management Systems
- iii. Banking Management Systems
- iv. Educational Organizations/Universities
- v. Credit card transactions
- vi. Social Media Sites
- vii. Networking and Telecommunications
- viii. Finance, Sales and marketing
- ix. Military applications
- x. Web applications including Online Shopping
- xi. Human Resource Management
- xii. Manufacturing and Advertisements
- xiii. Human resource Management

Evolution of Databases through SQL to NoSQL

FoxPro was broadly used in educational and banking sectors around

1995. When Microsoft MS Access came in market with more user friendly features, the database users switched to MS Access. MS Access was widely used with connectivity with Dot Net platform. However, security point of view MS Access users switched to Oracle SQL databases and other SQL databases. SQL databases such as SQL Oracle, MY SQL, SQL 2006, SQLite, SQL Server, SQL Azure, Postgre SQL, MyISAM, Turbo DB Embedded became popular. All SQL type databases work fine for structured form of data maintained in tables. But, social sites including Google, Twitter, Yahoo, LinkedIn, ebay, Amazon, Facebook, Netflix have multiple forms of unstructured data. This data includes text and multimedia contents. They include e-mail messages, word processing documents, presentations, images, audios, video files, webpages and many other types of business documents. Each of these data files has their own internal structures. It is not possible to transform such large size database into structured tabular form. Also, it is not possible to apply normalization to this huge size data. Hence, NoSQL(Not only SQL) databases came in practice as alternative to traditional relational databases. Now, NoSQL Databases such as MongoDB, MonetDB, Hypertable, Cloudera, Redis, Cassandra, Scylla, Hbase, Druid and CouchDB became equally popular in I.T. industry

Comparative of SQL and NoSQL Databases

Here are some points showing how SQL databases are different from NoSQL databases.

- i. SQL databases are relational databases. NoSQL databases are non-relational or distributed type.
- ii. SQL databases are table based

- databases. NoSQL databases are document based databases.
- iii. SQL databases have predefined schema. NoSQL databases have dynamic schema for unstructured data..
- iv. SQL databases are not best fit for hierarchical data storage while NoSQL databases are best fit for hierarchical data storage.
- v. SQL databases are feasible for structured type of data sets. NoSQL databases are feasible for semi-structured or unstructured type of data sets.
- vi. SQL databases are vertically scalable by increasing the CPU, RAM etc. on a single server. NoSQL databases are horizontally scalable by increasing more servers.
- vii. SQL databases are feasible for handling complex queries. NoSQL databases are not feasible for handling complex queries.
- viii. SQL databases are good for small size data sets. NoSQL databases are good for large size data sets.
- ix. SQL databases follow ACID properties (Atomicity, Consistency, Isolation and Durability). NoSQL databases follow Brewers CAP theorem (Consistency, Availability and Partition tolerance).
- x. In SQL databases, queries are applied by applying normalization. In NoSQL databases, the data is often captured by De-normalization.
- xi. Excellent vendor support is available for SQL database setups while limited outside experts are available for NoSQL database setups.
- xii. SQL databases are relational databases. NoSQL databases are non-relational or distributed type.

Classification of NoSQL Databases

NoSQL databases have many types. Currently more than 225 NoSQL databases exist in market. Some broad categories with example NoSQL databases are given below.

i. Wide Column Based Databases

Hadoop / HBase, MapR, Cloudera, Cassandra, Hypertable, Cloudata, MonetDB, IBM Informix, Druid

ii. Document Based Databases

MongoDB, Azure DocumentDB, Couchbase Server, CouchDB, ToroDB, MarkLogic Server, JSON, IBM Cloudant

iii. Key Value Based Databases

Azure Table Storage, Redis, Berkeley DB, Chordless, Scalaris, Maxtable, Sophia, LightCloud

iv. Graph Based Databases

Neo4J, TITAN, HyperGraphDB, GraphBase, Bigdata, BrightstarDB, WhiteDB, Trinity

v. Multimodel Databases

ArangoDB, OrientDB, CortexDB, Oracle NOSQL Database, ZZZ Base, AlchemyDB, WonderDB, RockallDB

Sample queries with SQL and NoSQL Databases

Following section shows how to use sample SQL and NoSQL databases in practice. Here, sample SQL queries (as example of SQL database) and sample queries of MongoDB (as example of NoSQL database) are presented.

AJ Sample SQL Database Queries

i. Creating the table in SQL

In SQL table is created using Create query. The table can be created with or without constraint and primary key.

```
SQL> Create table Employee (ID int, name varchar (20), salary decimal (18, 2));
```

```
SQL> Create Table Employee(ID Int Not Null, Name Varchar(20), Not Null, Salary Decimal(18,2), Primary Key(ID));
```

ii. Inserting values in table in SQL

The query inserts single or multiple tuples in table.

```
SQL> Insert into Employee (ID, name, salary) values (1, 'Aara', 20000.00);
```

```
SQL> Insert into Employee (ID, name, salary) values (2, 'Aaradhya', 15000.00);
```

```
SQL> Insert into Employee (ID, name, salary) values (3, 'Apurva', 10000.00);
```

iii. Displaying Contents of table in SQL

Select query selects and displays

one or more tuples from table as per specified in where clause.

iv. Updating or modifying of table in SQL

```
SQL> Select * From Employee;
```

```
SQL> Select * From Employee where ID=1;
```

```
SQL> Select * From Employee where Name Like 'Aa%';
```

```
SQL> Select * From Employee where Salary >= 100000 AND Salary <20000;
```

iv. Updating or modifying of table in SQL

Using update query the values in tuples can be changed. Using alter query the schema design of table can be changed.

```
SQL> Update Employee set Salary = 12000.00 ' where ID = 3;
```

```
SQL> Update Employee set Salary = Salary + 5000;
```

```
SQL> Alter Table Employee Add Age Int Not Null;
```

```
SQL> Alter Table Employee Drop Column Age;
```

v. Deletion Operation in SQL

SQL delete query deletes one or more tuples from table. Truncate query deletes all tuples from table. Drop query deletes complete table physically from memory.

```
SQL> Delete From Employee where Id = 2;
```

```
SQL> Delete * From Employee;
```

```
SQL> Truncate Table Employee SQL> Drop Table Employee;
```

vi. Sorting orders in SQL

SQL Order by query sorts the table in ascending order. We can sort based on primary and secondary keys. By default ascending order is considered in database. If we have to sort table in descending order then keyword 'Desc' is used in query.

```
SQL> Select * From Employee Order By ID;
```

```
SQL> Select * From Employee Order By ID, Name;
```

```
SQL> Select * From Employee
Order By ID Desc;
SQL> Select * From Employee Order
By ID, Name Desc;
```

B] Sample NoSQL Database Queries

i. To work with Mongo Server and Mongo Shell

Use following command

```
>mongod
>mongo
```

ii. Create a database and collection

Use following commands to create database "AVCOE" and collection "student" in it.

```
>use AVCOE
>db.createCollection("student")
```

iii. Inserting a document into a collection

Using insert command, we can insert either one or multiple documents in the collection.

```
>db.student.insertMany(
{
Roll: "3001",
Name: "Aara",
Course: {
CourseName: "BE",
Duration: "4 Years"
},
Roll: "3003",
```

```
Name: "Apurva",
Course: {
CourseName: "ME",
Duration: "2 Years"
},
Roll: "3002",
Name: "Aaradhya",
Course: {
CourseName: "BE",
Duration: "4 Years"
}}
```

iv. Reading a document from a collection

The find() function reads and display contents of all collection, The find.pretty() function formats the data to make it more viewable, The count() function shows the number of documents in the collection. The find().limit() function displays limited number of entries from collection.

```
>db.student.find({"Roll": "3001"})
>db.student.find()
>db.student.find.pretty()
>db.student.count()
>db.student.find().limit(2)
```

Updating a document in a collection

Update command is used to update one or multiple documents from given collection.

```
>db.student.update({
"Roll": "3001"},
$set: { Duration: "3 Years"}}
```

vi. Removing an entry from the collection

The remove command is used to remove all data from given collection. The drop () removes the collection physically from memory.

```
>db.student.remove({"Roll": "3001"})
>db.student.remove()
>db.student.drop()
```

vii. Sorting the collection

The find command displays contents but does not specify sort order. The find().sort({ Roll: -1 }) sorts according to roll in descending order. The find().sort({ Roll: 1 }) sorts according to roll in ascending order.

```
> db.student.find()
>db.student.find().sort( { Roll: -1 } )
>db.student.find().sort( { Roll: 1 } )
```

About the Author



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Ancient Indian (Vedic) Intellectual Heritage Knowledge-base: Preserving Heritage Language

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Introduction

Language is a vital part of any culture as it is one of the basic and essential modes of communication. In a society the communication among people, exchange of ideas and emotions are through native or foreign language. Diversity in India is reflected not only in its ecosystem but also in human culture and languages [1]. These languages have hundreds of different scripts associated with them in addition to heritage languages. A language should be preserved as it presents various aspects of cultural heritage, its extinction will deprive future generation from their traditions and values [2]. "Language loss begins with language shift". Language endangerment and loss of intergeneration transmission of linguistic and cultural tradition language is caused by external (economic, religion, cultural and educational subjugation) factors which in turn are driven by internal (negative attitude of community or decline of group identity) factors.

Sanskrit is one of the ancient languages of India, containing a very rich treasure encompassing every possible sphere of human thought, skill or communication ranging from philosophy to folk arts and crafts [3]. The knowledge base Sutras of all branches of learning in Sastraic literature are written in Sanskrit language. All intellectual pursuits are classified into three levels of learning-Anubhava (upasan), Experience (consciousness), Jnana-Knowledge (pure science) and Kausala-skill (applied science). Dealing with these is known as Para, Aparā and Kala Vidya. These also have four phases Learning, Reflection, Practice and Propagation. Vedic are sole repository leading to

attainment (material and spiritual). The Vedas are named Rg Veda (in form of laudatory hymns of deities etc.). Yajur Veda (describing sacrificial/ritualistic aspects of the use of vedic hymns). Sam Veda (dealing with musical recitation of hymns in sacrifices etc.) and Atharva Veda (propitiatory and mundane aspects like mental, physical, health, warfare, magic etc. Indian heritage have vedic text as foundation to its great culture and philosophy, hence it should be preserved and spread to masses.

In the digital age internet can be used to spread awareness about language, culture and its significance for their preservation [4]. The latest technologies can be used for storing, translating and recording the native languages [5]. Language preservation is the effort to prevent languages from becoming unknown.

With growth of internet, digital revolution is a new buzzword bringing almost all content on internet, but in English language which is hardly understandable by hardly 10% of Indian population. The mass penetration of IT in India is only possible where developed tools and technologies overcome the language barrier. Centre for Development of Advanced Computing (C-DAC), one of pioneering institution of research is involved in standardization and representation of Heritage scripts such as Grantha, Vedic, Samavedic, Modi, etc. in modern standards such as UNICODE. C-DAC developed portal and has established a regional mega scanning centre for digitization of heritage manuscript of various regions of India. Knowledge basis are to build for the entire range of literature (both Vedic and Classical) which require facilities for data processing besides

word processing. C-DAC's provides hardware as well as software solutions as a variety of platform, media and operating systems.

Indian Heritage and Language computing (IHLC)

The Indian Heritage and Language computing IHLC at C-DAC Bangalore, has been extensively involved in developing tools and products for preserving, processing, propagating and training of heritage languages. DESIKA is the first Sanskrit parser comprising of shabda-bodha and vedic processing. Its analysis is based on Paninian grammar according to which Sanskrit words / sentences are generated and analyzed. It also provides facility for paraphrasing an input sentence, changing the voice, euphonic combinations and accented input (Vedic) processing. C-DAC has also developed Grantha Vedic fonts along with C-Vyasa Sanskrit authoring system which is linked to Vidyasthanas. It has natural language interfaces such as an editor, multilingual documents creation with transliteration between Indian languages and Roman, utilities for sorting, searching, indexing, concordance, various analyses like morphological, syntactic and semantic, lexical update, grammar help and



Figure1 DESIKA Application

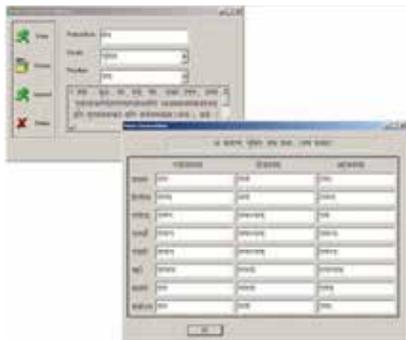


Fig. 2: Noun Generation using DESIKA

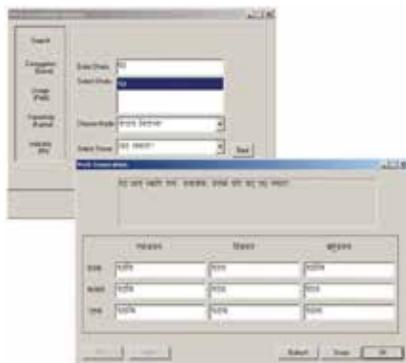


Fig. 3: Generate Verb for all Tense Mode

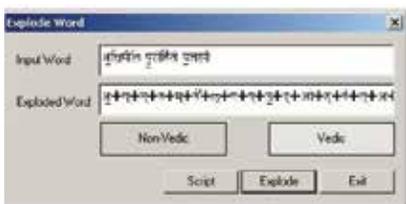


Fig. 4: Explode Vedic and Non Vedic Words

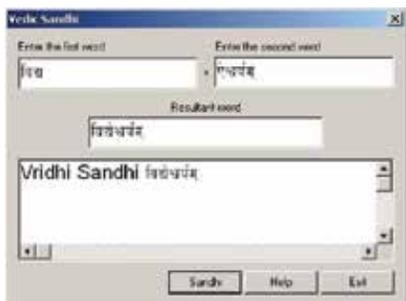


Fig. 5: Euphonic Combinations (Sandhi) using DESIKA



Fig. 6: Syntactic Analysis using DESIKA

hyperlinks to a variety of rule bases [5]. Veda Ratnakara, a comprehensive package covering RgVeda, YajurVeda, SamaVeda with browse, search and retrieve facilities for Samhita, Brahmana, Aranyaka, Upanishad, Kramapatha, Padapatha etc is also developed.

Fig. 6 shows that Entering a sentences gives grammatical analysis of words in the sentence. Vedic Content Creation from Original treatises of Ancient Indian Scientific Heritage.

- Pandulipi Samshodhak- Pandulipi Samshodhak is manuscript processing software, used in creation and publication of significant edition of manuscripts. Image processing tool is augmented with the software for Manuscript image processing. This software can be used to create catalogue of manuscripts, and also content creation for manuscript images. Pandulipi Samshodhak support both ISCII and Unicode based storage. Support Vedic accents and Grantha script is provided with the software.

- Vedic Editor - Vedic Editor is Word Processor for Vedic content creation. The Editor support RgVeda, Yajurveda and Samavedic accents.

- Veda Ratnakara - Veda Ratnakara is CD version of Vedic texts. RgVeda, YajurVeda, SamaVeda, Nirukta and Nighantu are covered in the application with browse, search and retrieve facilities. One can browse Samhita, Brahmana, Aranyaka, Upanishad, Kramapatha, Padapatha, etc. Rushi, Devata, Chandas, Viniyoga

information can also be retrieved for each rik of vedic texts.

- The Vedic Applications has been developed for the following: RgVed, YajurVeda, SamaVeda, Nirukta and Nighantu. Vedas are four in number, usually likened to a tree with four major trunks and branches (Sakhas) further in each trunk. Among these, RgVeda had 27 Sakhas, Yajur Veda initially divided into two major sub-types as Sukla (white) and Krsna (black) had 15 and 86 Sakhas respectively, Sama Veda had 1000 Sákhas and Atharva Veda 9 Sakhas. Currently, only two Sakhas of Rg Veda (there too, one of them is not very significantly different from the popular one), two in Sukla Yajur Veda, four in Krsna, Yajur Veda, three in Sama Veda (of which one has followers in single digits), and two in Atharva Veda (here also the number of reciters is in single digits) are surviving in tradition. The various Vedas and their Sakhas being recited by various schools depend also upon geographical locations with the highest concentration in South India (Tamilnadu, Andhra Pradesh, Karnataka, Maharashtra and Kerala) and more sparse distribution elsewhere. In every Vedic Sakha, there are four types of texts called the Samhita (to which portion only Pada-patha, Vikrtis and Varna-krama apply), Brahmana, Aranyaka and Upanisads. There are special Vedic grammar rules for each Sakha called 'Pratisakhya' and phonetic rules known as Siksa. There are also other 'Laksana Grantha's which deal with accent combinations (Sandhi), Vikrti formation etc. for a particular Sákha.

Any vedic Sala would typically contains lakhs of words and use large amount of space but the advent of information technology (IT) can help in making the information available on demand as manually it is impossible to print mass of all Vedas.

Knowledge Representation Issues

The predicate Logic (if then else

form of rules), semantic networks and conceptual dependency schemes are used for representation of world knowledge in modern computers. The "Sabda-bodha" concept in three branches Sastraic (Sanskrit) literature viz. Nyaya, Vyakarana and Mimamsa has shown correspondence with these methods [6] along with self interference generating characteristics of Sanskrit grammar [of Panini] [7]. The studies shows that Sastric concept can be applied to variety of application NLP (Natural Language Processing), MT (Machine Translation), CAL (Computer Aided Language) and Expert Systems. The audio interface development is useful and feasible based on a rule based approach for texts. Knowledge and use of vedic phonetic details would be vital for devising a successful speech recognition software for Sanskrit and many derived Indian languages.

NLP and ancient Indian sciences

Artificial intelligence research has to be necessarily multi-disciplinary in character as it involves Cognitive science, Computer Science etc. Language comprehension requires human complete sentences at various levels like Lexical, Syntactic, Semantic, Phonetic, Prosodic, Cognitive, Socio-Contextual etc. Ancient Indian scientific treaties deal with all these factors integrally, resulting in formation of a comprehensive system of language description for correct usage. The oldest instance of such a system pertains to the sacred (vedic) literature dating back to many millennium, which was transmitted only orally till a few centuries ago but is amazing distortion [8]. This was accomplished with the devices like

- i. Standard lexicon [e.g. Yaska's Nirukta] for Vedic term (with etymological and exegetical details) and Amarakosha etc. for secular literature providing a repository of words.
- ii. A well structured grammar [e.g. Panini's, Ashtadhyayi] to generate innumerable grammatically valid forms from a finite set of roots through rule.
- iii. System of logical compatibility and validity rules [e.g. Gautama's Nyaya Sutras] to produce speech with meaning.
- iv. Proper phonetic classification of sounds and defined euphonic combination process including accents [e.g. Panini's shiksha], for the character set of language.
- v. An intonation structure of speech for communication of emotions [e.g. Pingala's chandas sutras] through metrics and prosody.
- vi. A mean to realize the knowledge generated in absolute sentence [e.g. Vyasa's Brahma sutras] at philosophical level.
- vii. Guidelines for practical utility and wisdom [e.g. Jaimini's Mimamsa sutras] for vedic usage. Laukika nyayas for secular usage] in form of axioms and moral codes of rectitude. The result of such system is Shabda bodh method of analysis.

Conclusions

In this article the author has elaborated importance of preserving heritage languages and their importance in spreading awareness about our rich culture. Also author has emphasized that preserving heritage languages will also help in government inclusive drive

to include rural tribes and backward area with main stream. In order to preserve India's great heritage and culture it is important to preserve its languages. C-DAC is playing a major role in this area and many government organization are funding the research and development activities in this area e.g. Mahabharatha Database Project, funded by Department of Culture (DoC), SANSK-NET project funded by Ministry of Human Resource and Development (MHRD), Digital Library project - Funded by Department of Information Technology (DIT) but more efforts and awareness is required for preserving the information.

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Big Data For Business Analysis

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'Big Data', associated terms and phrases are among the contemporary entries in the stock of jargon. Augmentation in three fields of Advance Science and Technology over the previous few decades have led to the rise of big data sets followed by challenges lead to in dealing with them and attempts to meet these challenges. First is the swift increase in the variety and accessibility of automated devices and on-line procedures like sensors, IoT, actuators, CMM tools and softwares to convert images or colours and similar non-numeric characters to categorical or numerical data to capture, transmit and store data.

Development in parallel processing of data sometimes on several inter-linked system correspond to the second field. The third field is marked by significant augmentation in data-analytic methods and techniques as also in tools for making data-based inferences, along with quick developments of algorithms and soft wares to contrivance these methods, techniques and tools.

Big data arise in many viewpoint – from scientific inquisition in geology and astro-physics to management of retail marketing and of financial institution loans and advances. As Wikipedia tells us *Big data is an all-encompassing term for any collection of data sets so large and complex that becomes difficult to process them using traditional data processing applications. The challenges include analysis, capture, search, sharing, storage, transfer visualization and privacy violations. Some of the challenges are in the realm of Computer Science, some to Statistics and machine Learning and some are of concern to everyone.*

The optimal use of volatile, chaotic, nonlinear etc data which is generated at a high rate can be explain by Big Data. The organized information of Big Data can actually helps us an accurate and

deep understanding to dig out the main cause of failures of business as well as to tack a right decision for the benefit of the organizations

To determine the hidden pattern of information into the business data which is complex and chaotic we need a highly skill group so they can select the optimal size of sample of data right tools, technique and application to, manage and analyse the data

Reasons to Explore Big Data with Business Analytics

1. Business Analytics and Volume: Now a days business is based on e-commerce thus they work on 24*7 principal. for doing geographical boundary free Business the organization uses different modern AI, sensor based device that will generate huge amount of structure and unstructured, noisy, linear, non-linear data which has to be collected. The wisest way of business Analytics will produce significant information over the Big Data
2. Business Analytics and Velocity:- in Business real time data is generated at exponential speed with the different equipment which are used in business so that it can be investigated within the appropriate time. The wisest way of business Analytics will produce significant information over the Big Data
3. Business Analytics and Variety:- In business data like Text documents, audio, video, Email, stock market etc are generated by different Data sources so they are different in their structure. So to convert data into a canonical form in a wisest way is required, to produce significant information over the Big Data.
4. Business Analytics and Variability:- The business data is chaotic, nonlinear and unstructured so to

forecast over such type of data is a challenging task the wisest way is required, to produce significant information over the Big Data.

5. Business Analytics and Complexity. Data in Business comes from either internal, external, personal or archival data sources. Due to different architecture of the data source it is difficult to extract, transform and load the data into the repository due to the complexity of the data it is difficult to use procedures like hyper linking, searching, joining of hierarchies and dispersed data linkages. So the business data is complex and wisest way is required, to produce significant information over the Big Data.

Since the volume, Velocity, Variety, Variability and Complexity of business data is very complex thus a wisest way is required, to produce significant information over the Big Data.

Why is big data analytics important?

Due to the modern technology used in business the rate of generation of business data is very high in velocity and they are different in their format so the Big Data technology have a very significant uses for organizing and analysing the business data for decision making in resource management, health care, economic productivity of product and etc.

Nevertheless, the efficient analyses can result to make right decision and therefore better consequence can mean higher operational competences, reduction of cost and minimize the risk. It is a new technology through which we can minimize the operational cost of big data it also support to take the in house business decision. By using Big data technology the organizations can attain their objective in an efficient and effective way within a limited times this is why we should explore big data with

business analytics

The benefits of organized big data in marketing are listed below.

The billions of dollars and life can be saved by Predicting the main caused of disasters and flaws in real times. The sales and purchase of trends of customers can be also forecasted to take benefit of offers. Thus the risk portfolios can be calculated in just a minutes. The new opportunities can be identify through the analysis over the big data.

Big data analytics helps organizations neutralize their data and use it to identify new opportunities. In his report *Big Data in Big Companies*, IIA Director of Research Tom Davenport interviewed more than 50 businesses to understand how they used big data. He found they got value in the following ways:

1. **Cost reduction.** The storage and analysis over the Big Data will become economical due to the Hadoop and cloude-based technologies. Which help us to do business in a wisest and profitable way.
2. **Faster, better decision making.** Due to Hadoop and Cloude-based technologies the data is easily and fastly accessible at any time anywhere so the analysis over the data will become faster because the data is always into in-memory which boost the profitability of the business.
3. **New products and services.** To know the sentiment and opinion of the customer the vendors of cloud platform like Amazon Web Services (AWS) and Microsoft produce new products and services. Which helps to analyse the business data for betterment of the organization.

Working Principle of big data analytics:

It is very hard to process Big data with just simple on-hand database management tools or traditional data processing applications because Big data are huge collection of data sets. The big data uses inductive statistics and concepts from nonlinear system identification to conclude laws of multi - regressions, nonlinear relationships, and activities coming from large data

sets to show highly positive, positive, highly negative & negative relationships, and to identify dependent & independent facts to perform predictions of outcomes and behaviours.

One of the core features of big data analytics is the delivery of real or near-real time information . Latency must be avoided whenever and wherever possible. For instance, Data in memory is good but data on spinning disk at the other end of a FC SAN connection is not. It is for the reason that the cost of a SAN at the scale needed for analytics applications are very much higher than other storage techniques.

Hadoop clusters and NoSQL systems are used primarily as landing pads and staging areas for data before it gets loaded into a data warehouse or analytical database for analysis -- usually in a summarized form that is more conducive to relational structures.

Big data analytics users are adopting the concept of a Hadoop **data lake** more frequently **that serves as the primary repository for incoming** streams of raw data. In this architectures, data can be analysed directly in a Hadoop cluster or run through a processing engine like Spark. Sound data management is a crucial first step in the big data analytics process in case of Data warehousing. Data being stored in the Hadoop Distributed File System are organized, configured and partitioned properly to get good performance out of both extract, transform and load (ETL) integration jobs and analytical queries.

Once the data is ready, it can be analysed with the software commonly used for advanced analytics processes, includes tools for data mining, which shift through data sets in search of patterns and relationships; predictive analytics, which build models to forecast customer behaviour and other future developments, Machine learning, which uses algorithms to analyse large data sets; and deep learning, a more advanced form of machine learning.

Text mining and statistical analysis software also play a role in the big data analytics process, as can mainstream BI software and data visualization tools. For both ETL and analytics applications, queries can be written in **Map Reduce**,

with programming languages such as R- **Python**, Scala, and SQL, the standard languages for relational databases that are supported via SQL-on-Hadoop **technologies**.

Big data analytics technologies and tools

There's no single technology that covers big data analytics. There's advanced analytics that can be applied to big data, but in reality several types of technology work together to help us get the most value from your information.

Some of these are:

Data management

Only the quilted and well organize data can be analysed Due to variety in data, it's essential to process data again and again to maintain standards for data quality. Once data is reliable, organizations should establish a master data management program that gets the entire enterprise on the same page.

Data mining

The hidden patterns of the repository of huge amount of organized data can be retrieved from Data mining technology and this information can be used for further analysis to help answer complex business questions. With the help of data mining software, we can sift through all the chaotic and repetitive noise in data, identify with great accuracy what's relevant, use that information to assess desired outcomes, and then accelerate the pace of making informed decisions.

Hadoop

Hadoop is open source software framework can store large amounts of data and run applications on clusters of commodity hardware. It has become a key technology to doing business due to the constant increase of data volumes and varieties, and its distributed computing model It. processes big data fast. An additional benefit is that Hadoop's open source framework is free and uses commodity hardware to store large quantities of data.

In-memory analytics by analyzing data from system memory (instead of from your hard disk drive), we can derive immediate insights from our data and act on them quickly. This technology is able to remove data prep and analytical

processing latencies to test new scenarios and create models. It's an easy way for organizations to stay agile and make better business decisions, it also enables them to run iterative and interactive analytics scenarios.

Predictive analytics:

This technology uses data, statistical algorithms and machine-learning techniques to identify the likelihood of future outcomes based on historical data. It's all about providing a best assessment on what will happen in the future, so organizations can feel more confident that they're making the best possible business decision. Some of the most common applications of predictive analytics include fraud detection, risk, operations and marketing.

Text mining

With text mining technology, we can analyse text data from the web, comment fields, books and other text-based sources to uncover insights we hadn't noticed before. Text mining uses machine learning or natural language processing technology to combine through documents – emails, blogs, Twitter feeds, surveys, competitive intelligence and more – to help us analyse large amounts of information and discover new topics and term relationships.

Unstructured and semi-structured data types don't fit well in traditional data warehouses that are based on relational databases oriented to structured data sets. Further, data warehouses may not be able to handle the processing demands posed by sets of big data that need to be updated frequently -- or even continually, as in the case of real-time data on stock trading, the online activities of website visitors or the performance of mobile applications.

As a result, many of the organizations that collect, process and analyse big data turn to NoSQL databases, as well as Hadoop and its companion tools, including:

- **YARN:** It is one of the prime characteristics of second-generation Hadoop that works on the cluster management technology.
- **MapReduce:** A software framework

that helps the developers to write applications that process huge amounts of unstructured data, which exist in parallel across a distributed cluster of processors or stand-alone computers.

- **Spark:** It is an open source, parallel processing Framework that enables users to execute Large-scale data Analytics Applications across clustered systems.
- **HBase:** It stores key/value based data that supports Hadoop Distributed File System (HDFS).
- **Hive:** It is an open source data warehouse system used for querying and Analysing huge data sets stored in Hadoop files or on cloud.
- **Kafka:** The centralize messaging system is replaced by distributed messaging system.
- **Pig:** It is an open source technology that provides a advance processing technique for the parallel programming of MapReduce jobs executed on clusters data stored in Hadoop file.

Big data analytics uses and challenges

Big data analysis application needs manage or organized data that will be collected from different internal or external sources running on parallel processor or on a stand alone system. The repository of data will be compiled by either third party or information service providers. the real time data analysis over the data of Hadoop system can be done through processing engines like Spark , Flink and Storm for this the, streaming analytics applications are very useful

Earlier In a large organization the Big data system were deployed on premises for acquiring ,organizing and analysing huge amounts of data. Due to the vendors of cloud platform like Amazon Web Services (AWS) and Microsoft it is simple to deploy and manage Hadoop cluster in the cloud the supplier of Hadoop like the Cloudera and Hortonworks supports the architecture of AWS and Microsoft Azure clouds framework distributions Users can now sign up into the clusters in the cloud, use them for as long as they require and then take them offline

with usage-based pricing that doesn't require on going software licenses.

Vital Drawback of big data analytics initiatives include a lack of in house analytics skills and the high cost of hiring experienced data scientists and data engineers to bridge the gaps. the vendors like Alteryx, IBM, Microsoft and Knime produce software for big data analysis that is easier to use, particularly for the growing citizen data scientist population.

The volume of the data, variety and the speed of generation of data can produce data management issues related to data quality consistency and governance. In addition, it is the challenge of many IT and analytics team to integrate the Heterogeneous Big Data tools like Hadoop, Spark etc into a cohesive architecture that meets an organization's big data analytics needs, this can be done through identifying the right mixture of technologies and then put the pieces together

Clients of Big Data Analytics:

The following different types of organizations might use the technology.

Travel and hospitality :

The key of the travel and hotel industry are the customers satisfaction, but customer satisfaction can be hard to gauge – especially in a timely manner. Resorts and casinos, Big data analytics gives these businesses the ability to collect customer data, apply analytics and spontaneously identify potential problems before it's too late.

Health care:

The big data analytics technology is so important to health care. By analysing both structured and unstructured – quickly, large amounts of information like Patient records, health plans, insurance information and other types of information , health care providers can provide lifesaving diagnoses or treatment options almost immediately.

Retail:

To boost profitability the retailers have to understand customer exactly what they need, when they need it. Big data analytics technology helps retailers to find the answer from customer loyalty programs, buying habits and other sources, retailers not only have an in-depth understanding of

their customers, they can also predict trends, recommend new products .

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Aspects, Domains and Tools of Heritage Computing

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1. Introduction:

"Heritage" means events or processes that have a special meaning in group memory. In 2002, UNESCO listed various heritages as cultural heritage sites, momentous cities, enriching landscapes such as parks, gardens, natural holy sites, undersea cultural legacy such as shipwrecks, museums, variable cultural heritage such as paintings, stone kit, handicrafts etc., textual and digital legacy, cinematographic heritage, verbal traditions, languages, celebratory events, rites and values, composition and song, the recreational dramatics arts, conventional medicine, novel story, cooking conduct, traditional sports event.

Heritage is a crucial element of day today's life and of the prospect we put forward to put together. Heritage perpetuation and elucidation plays a productive role in the social development of nations, states, and local regions. In almost all field computers and related software/hardware technology plays vital role in preservation, promotion and understanding of heritage.

2. Aspects of Heritage Computing:

'History and Computing', 'Humanities and Computing' are in a vital part of development. The literary heritage zone is turning digital and always added archival. There is a necessity for novel methods and techniques to route the inundation of digital assets. Computer researchers are performing on information problems of artistic heritage. Advanced techniques the Semantic Web and in grid computing and are invigorating a new variety of e-Culture, e-Science, e-History, and e-Humanities. Virtual libraries, digital archives, Data enrichment, electronic textbook expurgation, digital source editions, analyzing the Text and reclamation, text

analytical and ontological problems, literary and linguistic computing, Images and multimedia, Visual object detection, Content based artist identification, Geographical Information Systems for historical studies, Quantitative data analysis, digitization strategies, methods of database design, XML in the structuring of heritage information are some of the aspects of heritage computing [1]. Visual computing is one more significant loom in built heritage learning. It prefers non-linear spatial narratives of the 3D models helpful to analyze and illustrate the buildings. Such models offer an aggregative hub for the diverse size of information associated to momentous buildings allied to text, drawings, data, images, etc. there in. Visual architectural modelling and database modelling associate together in wide-ranging and the entire system gives rise to multifaceted informative models – navigable and interactive, helpful for the accepting, knowledge, protection, communication and augmentation of architectural heritage [2].

3. Domains of Heritage Computing:

Using a prototype DESIKA, and ancient Indian language Sanskrit has been processed where input sentence is taken into Sanskrit and its paraphrased meaning is presented as output in Sanskrit itself. The same processing can be extended to other Indian languages such as Pali and Prakrit. C-DAC, Pune works on Computational Rendering of Panini and Natural Language Processing (NLP) using ancient Indian Scientific Approach using Graphics and Intelligence based Script Technology (GIST). In GIST, sanskrit words are represented in Devanagari characters including accent marks [3].

C-DAC, Kolkata has digitized over 40 Million pages rare and copyright free books, over 3 Million pages of

rare collections of Nobel Laureate Gurudeva Rabindranath Tagore is microfilmed, 1500 old Gramophone Records digitized, web portal for North Eastern state libraries is developed, Developed a Digital Content Repository for Books, Manuscript and Audio-Visual Performance of Baul Songs using Open Source Software "Fedora" with over 1,00,000 Books / Journals and 250 Baul Songs with Metadata-based search & retrieval, Bengali OCR with above 90% character level accuracy on trained singular size font has been developed and unattended batch mode conversion is also possible.

Three dimensional citations and virtual presentation is a work of narrative and efficient way to conserve and develop prehistoric buildings and traditions. As an effort, a loom to document Chinese Hakka culture and Tulou was depicted and practiced, with a new policy for internet-based cloud-enabled virtual experience of cultural visit in three dimensional ways. The resources and facts of Hakka culture was surveyed and composed on site, including past fruition, Tulou or its residue or remains and folk traditions. Data sets related with Tulou probed by terrestrial laser scanner, unmanned aerial vehicle and digital camera are integrated and modelled in realistic 3D manner [4].

Cultural heritage studies involve activities such as digital data visualization, information analysis and sharing results. CHER-Ob a software system provides effective tools for analysis of cultural heritage research [5].

In addition to modernized technologies for data collection and processing in cultural heritage, an preliminary video generator based on the open source software CHER-Ob for shared analysis is helpful tool

for combining cultural and digital property as well as providing a way for scientists to publicize cultural heritage result to the public in professionally by incorporating cultural context in the data. The open source software *CHER-Ob* gives a platform for diverse types of data in the form of 3D, 2D, reflectance transformation imaging (RTI), computed tomography (CT) images with the textual information [6].

As an example of interactive digital guide and database for understanding the history and future planning, The New Haven Building Archive (NHBA) harnesses digital mapping technologies, society-based research and location-based storytelling aids in the co-production of facts about the city by academic researchers, local citizens and students. NHBA is a digital, mobile, and field directs to New Haven, Connecticut's built heritage [7].

For analysis of digitized medieval manuscripts automatic algorithms such as, text block computation, text line segmentation and special component extraction can be employed by taking advantage of previous clustering algorithms and a template matching technique. Evaluation studies of these algorithms on 1771 images of widely differing chronological manuscripts showed very satisfactory performance. The average precision and recall values obtained by the text block computation method found reach as high as 98% and 99%, respectively. It is more useful where several images need to be analyzed. These algorithms work on a per page basis, so that they can be used in a wider range of applications [8].

Special Object Extraction from Medieval Books using Superpixels and Bag-of-Features (BoF) proved comparable to that using state of art algorithms but greatly outperforms them in terms of generality and

computational time. Instead of single pixel, superpixels as the basic classification units improve time efficiency. Starting from labelling the superpixels of the training images and further computing their BoF representations, construct a superpixel categorization classifier [9].

In civilizing heritage conservation projects, it is very significant to recognize and follow weathering effects on monuments in order to design and test preservation strategy. Weathering effects on stone monuments can be considered by using 3D reconstruction of a model reducing the vagueness and subjectivity of handbook mappings. Three dimension reconstruction models can be constructed by using photogrammetry techniques. The noise in the acquired data is reduced with adaptive and anisotropic filter. To estimate the original shape of the surface before the weathering effects RANSAC algorithm is a useful tool [10].

For heritage projects that need to depict 3D conservation challenges but do not have the budget or time for a 3D model an intermediate solution of virtual tour environments (VT) and informational modelling (IM) presents practical alternative [11].

4. Conclusion:

Importance of heritage computing with applications in different domains using various tools is discussed.

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About the Authors



Dr. D. V. Kurmude [CSI-2010001037] presently working as Associate Professor and Head in Department of Physics at Milind College of Science, Aurangabad, MS-India. He has published more than 20 research papers in International Journals and conferences. He has published two articles in CSI magazine. Authored one book published by international publisher. He can be reached at dvkurmude@yahoo.com



Dr. S. N. Kakarwal [CSI-F8000602] is presently working as Professor in Department of Computer Science & Engineering of P.E.S. College of Engineering, Aurangabad, MS-India. Her research interests include Image Processing, Pattern Recognition. She has published 13 papers in International Journals, 25 papers in International Conference and 11 papers in National Conferences. She has published six articles in CSI magazine. She can be reached at s_kakarwal@yahoo.com



One-day National Workshop on “Data Science and Machine Learning using Big Data & Hadoop”

Organised by Faculty of Computer Application, RBS Management Technical Campus, Agra, U.P.

In association with **Computer Society of India, Agra Chapter** and **KVCH ORACLE-WDP, Noida**

On 20th September 2018



Mr. V. K. Singh, Dr. A. N. Singh, Dr. K. K. Goyal, Mr. Nitin Saini and Mr. Manish Kumar sharing the dais in the inaugural ceremony of the workshop at RBSMTC, Agra, UP.



Faculty members of R.B.S. Management Technical Campus, Agra and participants in the technical session of the workshop.

Prof. (Dr.) B.B.S. Parihar, Chairman, CSI Agra Chapter and Dr. K. K. Goyal, Secretary, CSI Agra Chapter.

A one-day national workshop on “**Data Science and Machine Learning Using Big Data & Hadoop**” was organized by Faculty of Computer Application, Raja Balwant Singh Management Technical Campus, Khandari Farm, Agra (U.P.) in association with CSI, Agra Chapter and KVCH ORACLE-WDP, Noida on 20th September 2018. The workshop was started at 10:00 am with the garlanding and lamp lighting before the idols of Maa Saraswati and Raja Balwant Singh Ji.

Dr. Sanjeev Kumar, Director, Community Radio, Dr. B. R. Ambedkar University, Agra, Dr. Amit Chaturvedi, Assistant Professor, MCA Department, Government Engineering College, Ajmer, Mr. Arvind Sharma, Regional Vice President Region -1, Computer Society of India, Mr. Nitin Saini, Senior Coprate Trainer, KVCH ORACLE- WDP, Noida and Mr. Manish Kumar, General Manager, KVCH ORACLE-WDP, Noida were the eminent speakers of the workshop. Prof. (Dr.) B.B.S. Parihar, Director, R.B.S. Management Technical Campus, Agra & Chairman, Computer Society of India, Agra Chapter, Dr. A. N. Singh, Dean Examination, R.B.S. Management Technical Campus, Agra, Mr. V. K. Singh, Dean Corporate Relations,

R.B.S. Management Technical Campus, Agra and Dr. K.K. Goyal, Associate Professor and Dean Faculty of Computer Application, R.B.S. Management Technical Campus, Agra share the dais with the guests. Dr. K.K. Goyal delivered introductory talk of the workshop. Dr. Sanjeev Kumar addressed the participants and aware them about the problems associated with the massive sized data. Mr. Amit Chaturvedi encouraged participants to upgrade themselves about the latest techniques to manage day-by-day increasing online data. Mr. Arvind Shrama told participants about the job opportunities in the field of Big Data. Prof. (Dr.) B.B.S. Parihar, Dr. A. N. Singh and Mr. V. K. Singh also addressed the gathering.

After the inaugural ceremony, the hands-on training workshop was started by Mr. Nitin Saini and Mr. Manish Kumar. Workshop was conducted in four sessions. Sessions were very interactive. In the first session, participants were introduced with Big Data and Hadoop environment. In the second session, participants learned about the Hadoop file system and architecture. The third session was focused on Hadoop MapReduce and Hadoop JAQL. The fourth session was based on Hadoop HIVE, Hadoop PIG, Hadoop Flume and Hadoop Sqoop.

3rd National Conference on “Innovative Realms in Management and Technology”

(Association with Computer society of India (CSI) & DMA)

on

November 16, 2018



Chanderprabhu Jain College of Higher Studies and School of Law organized 3rd National conference on the topic of “Innovative Realms in Management and Technology” in association with Computer society of India (CSI) & DMA on November 16, 2018 in the college auditorium. The conference was inaugurated by Hon’ble Chief Guest Sh. Mohanish Verma (IRS, Principal, Commissioner of Income Tax, Gurugram) and Guest of Honour Sh. Vijay Kumar verma (Chairman, CSI Delhi Chapter, HOD(CSE), Delhi Technological University), Sh. Yugank Chaturvedi (Director General), Prof. JP Mohla (Director, Academics), Dr. DC Agarwal (Director, MCIT), Dr. Neeta Beri (Principal, School of Law) and Ms. Neha Mittal Bhaskar (Dean, MCIT). The First Technical session Chaired by Dr. Devendra Tayal (Professor, IGDTUW), Dr. DC Agarwal (Director, CPJCHS) and Dr. J.P Mohla (Director, Academics). The Second Technical session Chaired by Dr. S.K. Jain (Professor, IIT Delhi), Dr. DC Agarwal (Director, CPJCHS) and Dr. J.P Mohla (Director, Academics)

More than 100 Participants form the various universities, colleges and industries.

Bet paper award given to Mr. Gaurav Kumar Panda (Research Scholar, Lingaya’s University, Faridabad) and Ms. Pooja Khatri (Assistant Professor, DU). The conference concluded with the Vote of thanks by Mr. Yugank Chaturvedi (Director General).

A brief Report of Two-day National Workshop on “Cyber Security and Data Privacy”



organized by Faculty of Computer Application,
R.B.S. Management Technical Campus, Agra, U.P.
in association with Computer Society of India,
Agra Chapter and CyberCure Technologies (P) Ltd., New Delhi

on

25th-26th October 2018

Prof. (Dr.) B. B. S. Parihar,

Chairman, CSI Agra Chapter and Dr. K. K. Goyal, Secretary, CSI Agra Chapter.



**Prof. (Dr.) Sunder Lal (Former Vice Chancellor,
Veer Bahadur Singh Purvanchal University, Jaunpur)
addressing the audience in the inaugural ceremony
of the workshop.**



**Mr. Sangeet Chopra (Technical Head & Co-founder,
CyberCure Technologies (P) Ltd, New Delhi)
addressing the audience in the
inaugural ceremony of the workshop.**

A two-day national workshop on “**Cyber Security and Data Privacy**” was organized by the Faculty of Computer Application, Raja Balwant Singh Management Technical Campus, Khandari Farm, Agra (U.P.) in association with CSI, Agra Chapter and CyberCure Technologies (P) Ltd., New Delhi on 25th - 26th October 2018. Prof. (Dr.) Sunder Lal (Former Vice Chancellor, Veer Bahadur Singh Purvanchal University, Jaunpur) was the chief guest in the inaugural ceremony. Dr. Sanjeev Kumar, Director, Community Radio, Dr. B.R.Ambedkar University, Agra and Dr. M.P.Singh, Head, Department of Computer Science, Dr. B.R.Ambedkar University, Agra were the guests of honour of the ceremony. Mr. Sangeet Chopra, Technical Head & Co-founder, CyberCure Technologies (P) Ltd., New Delhi was the keynote speaker of the workshop. Prof. (Dr.) B.B.S. Parihar, Director, R.B.S. Management Technical Campus, Agra & Chairman, Computer Society of

India, Agra Chapter, Mr. V. K. Singh, Dean, Corporate Relations, R.B.S. Management Technical Campus, Agra and Dr. K. K. Goyal, Associate Professor and Dean, Faculty of Computer Application, R.B.S. Management Technical Campus, Agra and Secretary, CSI Agra Chapter shared the dais with the guests.

The event was started at 11:00 am with the garlanding and lamp lighting before the idols of Maa Saraswati and Raja Balwant Singh Ji. Dr. K. K. Goyal delivered introductory talk about the workshop and explained schedule of two-day workshop. After that Prof. Sunder Lal, Dr. Sanjeev Kumar and Dr. M.P. Singh addressed the gathering and motivated participants about new techniques to protect themselves from the adverse effects of cybercrimes. Prof. (Dr.) B.B.S. Parihar and Mr. V. K. Singh also addressed the gathering.

After the inaugural ceremony, the hands-on

training workshop was started by Mr. Sangeet Chopra (keynote speaker of the workshop). Workshop was conducted in four sessions. All the sessions were very interactive. Participants learned the basics as well as intricacies of cyber security and data privacy. They learned about cybercrimes and method of protecting themselves from these cybercrimes. In the first session, participants learned the basic concepts of hacking, including the difference between ethical and unethical hacking. The second session was focused to aware participants about Internet and operating system security. In the third session, participants were introduced to the various techniques of password hacking and security. Participants also learned

about mobile hacking and security in this session. Fourth session was based on computer forensics and cybercrime investigation.

The valedictory ceremony was held on 26th October 2018. Ceremony started at 4:30 pm. Dr. S.P. Madnavat, Professor and Principal, Raja Balwant Singh College, Agra, U.P. was the chief guest of the ceremony. Dr. N.K. Singh, Principal, B.V.R.I., Bichpuri, Agra and Dr. M.S. Chauhan, Principal, R.B.S. Polytechnic, Bichpuri, Agra were the guests of honour of the ceremony. Prof. (Dr.) B.B.S. Parihar, Director, R.B.S. Management Technical Campus, Agra, Mr. V.K. Singh, Dean, Corporate Relations and Dr. K. K. Goyal, Dean, Faculty of Computer Application also addressed the participants.



Prof. (Dr.) B.B.S. Parihar(Director, RBSMTC, Agra, UP and Chairman, CSI, Agra Chapter) addressing the audience in the inaugural ceremony of the workshop.



Mr. Sangeet Chopra addressing the audience and answering their queries in the inaugural ceremony of the workshop.



Dr. S. P. Madnavat, Dr. N.K. Singh, Dr. M. S. Chauhan, Prof. (Dr.) B.B.S. Parihar, Mr. Sangeet Chopra, Mr. V. K. Singh, Dr. K. K. Goyal, faculty members of RBSMTC, Agra and Participants in the valedictory ceremony of the workshop.

Public Notice

Computer Society of India (CSI) is hereby cautions the members at large of society that, suspended Execom Member of Computer Society of India **Sri Raju L Kanchibhotla** (*suspended from ExecCom on 25th March,2018 R15, with reference to Disciplinary Committee report headed by Prof. K K Aggarwal, Past President & Life Time Achievement Awardee of CSI for financial irregularities', mishandling of fund etc.) is blasting mail's to mislead member's at large of CSI.

Please, note that, Raju L Kanchibhotla is no more ExecCom Member and is trying to mislead member's at large and CSI is taking appropriate legal against this corrupt member at appropriate forum.

All concerned are herewith requested to be cautious with suspended Member of CSI Sri Raju L Kanchibhotla and deal with proper due diligence.

Sri Raju L Kanchibhotla is not representing CSI as it's Acting Hon Secretary / Div. 3 Chair and his demand is false, fabricated, baseless and to misguide members at large and more over this suspended ExecCom Member is trying to damage image of CSI at different forum.

In the interest of CSI, this public Notice is served to member's at large.

Public Notice

Computer Society of India (CSI) is hereby cautions the members at large of society that, **Sri Gautam Mahapatra**, Scientist G of RCI-DRDO is suspended (*suspension is ratified at General Body Meeting of CSI at New Delhi on 30th June 2018) from Computer Society of India for **CSI Fund Misappropriation and Irregularities and not Representing CSI at any Forum.**

Dr. Gautam Mahapatra, Scientist G of RCI-DRDO and the then Chairman of CSI Hyderabad Chapter (for the year 2014-15) had raised invoice to different parties for Sponsorship (*raised on behalf of CSI Annual Convention 2014) towards **CSI Annual Convention 2014 of ₹ 61,02,467.00 and collected sponsorship amount ₹ 61,02,467.00 in the name of CSI Annual Convention 2014 and not paid service tax amount (12.36% of ₹ 61,02,467.00 approx. ₹ 7,54,265.00)** for the FY 2014-15 collected from different companies.

Please, note that, Gautam Mahapatra is no more ExecCom Member and is trying to mislead member's at large and CSI is taking appropriate legal against this corrupt member at appropriate forum.

All concerned are herewith requested to be cautious with suspended Member of CSI Sri Gautam Mahapatra and deal with proper due diligence.

Sri Gautam Mahapatra is not representing CSI as it's President and his demand is false, fabricated, baseless and to misguide members at large and more over this suspended Execom Member is trying to damage image of CSI at different forum.

In the interest of CSI, this public Notice is served to member's at large.

Sd/-

Prof. Santosh K Yadav
Hon. Secretary
Computer Society of India
(E) secretary@csi-india.org
www.csi-india.org

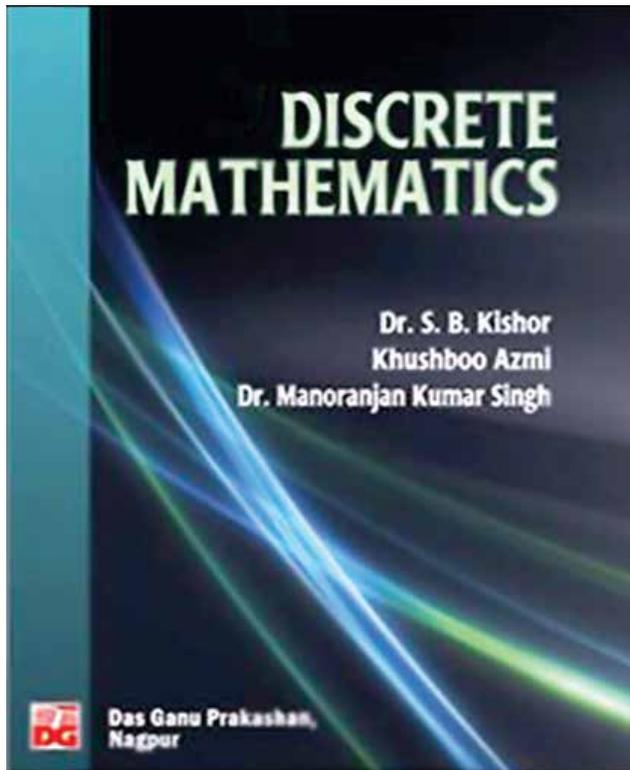
Copy: CSI Notice Board for publication and herewith directing CSI HQ to publish this notice in Times of India (all India edition) and CSI's official portal (csi-india.org)

REVIEW OF THE BOOK DISCRETE MATHEMATICS



Dr. Subhash Chandra Yadav
Associate Professor and Head,
Department of Computer Sc. and Tech.
Central University of Jharkhand, Brambe,
Ranchi-835205

ISBN : (978-93-81660-21-8)
Published by: Das GanuPrakashan, Nagpur



This textbook provides very good introduction of Discrete Mathematics subject especially to non-computer science professionals by specifying its important role in Computer Science. Every topic in this book which includes Sets and Subsets, Counting, Relation, Graphs and Functions, Graph Theory etc. has been started with necessary introduction and developed gradually up to the standard form.

This book lays emphasis on the applicability of mathematical structures to the Computer Science. The content of this book is well supported with numerous solved examples with detailed explanation. The author provides a lot of examples for each of its Theorems and topics. In this era of I.T, Computer and Software System are modeled by Discrete Mathematics. This concept is correctly elaborate by authors. This book is well written in a simple and lucid language and have enough practical and exercise for the students to elaborate the concept which make this book more promising compare to other competing books.

We highly recommend this book for Undergraduate and Post-Graduate students who do not have strong mathematics background due to its overall contents for beginners to expert levels and various illustrated problems.

About Authors-

About Authors

Dr. S. B. Kishor

Dr. S. B. Kishor is presently the head of the department of Computer Science at Sardar Patel Mahavidyalaya, Chandrapur. He is passionate about teaching and recipient of "Ideal Teacher Award-2012" and "Best Writer Award-2013" of RTM Nagpur University, Nagpur. He is a member of many professional bodies including CSTA New York, IEDRC Hong Kong, ITES Mumbai.

Dr. Kishor is more synonymous for his dedication in the field of writing qualitative books and is the author of several popular books in Computer Science and Management courses that include Data Structures, Oracle, information Technology, MIS, Programming in C, Principles of Business Management etc. His articles are published regularly in Magazine and Media. Dr. Kishor, has presented numerous papers and is also working as a Chairman of Board of Computer Science in Gondwana University, Gadchiroli. He is also working as a supervisor for Computer Science and Management scholars.

Prof. Khushboo Azmi

Prof. Khushboo Azmi is presently working as Officiating Principal and Head of Department of Computer at Dr. D. Y. Patil Institute of Management, Pune. A Gold Medalist in her UG and M.Sc. (Computer Science) from RTM Nagpur University and also recipient of the Best Students award in her college life. She has published many papers in Seminar and Conferences. Her articles are published in Drishti Magazine, Pune and her area of interest is Numerical Methods, System Security and working on the concepts of Operating System.

Dr. Manoranjan Kumar Singh

Dr. Manoranjan Kumar Singh is working as Professor at P.G. Department of Mathematics, Magadh University, Bodh-Gaya, (Gaya) Bihar. A Gold Medalist in M.Sc. (Math) is a recipient of "ISCA Young Scientist award-1989", Best Teacher Award in 2005, Best Research Paper Award in 2008, D.Sc. Degree in 2009 and "UGC BSR Fellow -2012" is a member of many professional bodies. He is the author of many books which includes "An introduction to General Topology", "Axiomatic Foundations Of Set Theory", edited book "Recent Trends in Mathematics & Computational Methods. One of his international books "Theory of Fuzzy Structures And Applications (Fuzzification Of Mathematical Nations)" is highly acknowledge by faculties members. He has presented many papers in National and International Conferences and worked as Chairman for many National and International conferences and delivered numerous talks as Resource Persons in Academic Staff Colleges. He has about hundred articles in National and International journals as well as popular National Magazine (Science Reporter, Invention Intelligence etc.). So far, 15 students have obtained their Ph.D. under his supervision. He is the Editor-in-Chief of two international journals.

International Conference on Recent Advances in Mathematics and Scientific Computing



September 18-19, 2018



Prof. A. K. Nayak, Vice President, Computer Society of India delivered the key note address in the two days International Conference on **“Recent Advances in Mathematics and Scientific Computing”** Sponsored by UGC and SCRS along with two days National Seminar on **“Application of Technical Terms in Research and Teaching in Computer Science and Mathematics”** Sponsored by CSTT, Ministry of H.R.D., New Delhi during September 18-19, 2018. Organised by University Dept. of Mathematics, Magadh University, Bodhgaya.

Chief Patron: Prof. Qamar Ahsan, Hon'ble Vice Chancellor, M.U., Bodhgaya

Patrons:

Prof. K. N. Paswan, Pro Vice Chancellor, M.U., Bodhgaya

Col. Pranav Kumar, Registrar, M.U., Bodhgaya

Organizing Secretary: Dr. Manoranjan Kr Singh, Prof. & Head, Department of Mathematics, M.U., Bodhgaya

Prof. (Dr.) H.C.S. Rathore, Vice Chancellor, Central University of South Bihar was the Chief Guest. The program started with University anthem and felicitation of guests. Dr. Manoranjan Kr. Singh, Organizing Secretary, has given the welcome speech and briefed about the theme of the Conference. Thereafter Prof. H.C.S. Rathore has talked about the role of mathematics and need of scientific computing. Then Dr. Brajesh Kumar Singh, Assistant Director, CSTT, New Delhi has briefly talked about CSTT and its functioning. On this occasion Souvenir for the Conference was also released by the guests. At the same time a book on 3D geometry, written by Dr. Manoranjan Kr. Singh was also released. Thereafter, Prof. K.N. Paswan addressed the audience. Prof. K.C. Prasad, Former Professor, Ranchi University, key note speaker, has given a talk on the topic **“Some of our results in Diophantine Approximation”**. Prof. A. K. Nayak, Director, IIBM has given talk on the topic **“Recent Advances in Scientific Computing: Empowering Global Community”**. Then Prof. D.K. Yadav, Dean of Science, M.U., Bodh-Gaya and Prof. A.K. Mahto, Pro Vice Chancellor, BBMKU, Dhanbad have addressed to the participants. The inaugural session ended by vote of thanks given by Dr. Sunil Kuman, M.U., Bodh-Gaya. During the technical sessions invited speakers from IIT's, NIT's and abroad delivered the invited lectures along with several research papers. Almost 300 delegates were present in the Conference/Seminar.



Application Form for Individual / Life Membership

I, hereby, apply for new membership. On approval of Membership, I shall abide by the Constitution & Byelaws of the Society and the Code of Ethics. Please send a good quality minimum 300 x 300 pixels / passport size photograph to swapnil@csi-india.org to be used for making your CSI Membership Card (photo required only for Life Members) along with a copy of Voter ID / Aadhar Card / PAN Card / Driving Licence

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w.e.f. 01st July, 2017

Attach photocopy of Pay-in-slip with application form and write your Name, Contact no. on the reverse side of the Cheque / DD / Pay-in- Slip.

III. Mailing address (BLOCK LETTERS):

I affirm that as a CSI member, I shall abide by the Code of Ethics of the Computer Society of India (CSI). I, further, undertake that I shall uphold the fair name of the Computer Society of India by maintaining high standards of integrity and professionalism. I was not a member of CSI earlier. I am aware that my breach of the Code of Ethics may lead to disciplinary action against me under the Byelaws and rules of the CSI. I, hereby, confirm that I shall be bound by any decision taken by the CSI in such matters. Further, I hereby convey my consent to receive the CSI publications in soft copy form and any other information about the activities of the society by email or by SMS on my Mobile number, from time to time, by the society or the members of the society.

Date: / /

Place:

Signature : _____

FOR OFFICE USE ONLY

Application received date : _____

Received By : _____

Application processed by : _____

Membership No.

(Membership subscription fee details for the information of the applicant, not to be attached with the Application Form to be sent to CSI)

VI. Membership Subscription Fees:

1. Individual Membership Fee:

(The membership Period is on Rolling Year basis)

Membership Category	One Year	Two Year	Three Year	Four Year
Within India	₹ 1000 + 18% GST = ₹ 1,180.00	₹ 1800 + 18% GST = ₹ 2,124.00	₹ 2600 + 18% GST = ₹ 3,068.00	₹ 3400 + 18% GST = ₹ 4,012.00
Outside India	\$60	\$110	\$150	\$180

2. Life Membership Fee (irrespective of the age of the applicant)

(The membership Period is on Rolling Year basis)

Nationality	Regular Life Membership Fees (in instalments)
Within India	₹ 10,000 + 18% GST = ₹ 11,800.00 Can be paid in 4 equal instalments spread over 4 years*:- Each year ₹ 2,500.00 + 18% GST = ₹ 2,950.00 *Note: i. Three PDCs of the amount ₹ 2,950.00 are to be given in the first year itself, along with the Membership Application Form. ii. Membership shall be terminated with immediate effect, if the PDCs are not realized. iii. Additional liability, on account of any subsequent changes in the GST rule will need to be paid by the member.
Outside India	USD \$ 650



Inaugurated of CSI Students Branch at Sandip University, Nashik



Sandip University has inaugurated “Computer Society of India Student Branch” Nashik on 16th November 2018 under the guidance of Col. Prof. N. Ramachandran, Vice Chancellor, Sandip University Nashik. The Inauguration was done at the kind hands Mr. Pradeep Rathi, Regional Vice President, Region- 6 (Maharashtra & Goa) of Computer Society of India. Computer Society of India is the first and largest body of computer professionals in India. It was started on 6th March 1965 by a few computer professionals and has now grown to be the national body representing computer professionals. It has 72 chapters across India, 511 student branches, and 100,000 members.

The Computer Society of India is a non-profit

professional meet to exchange views and information learn and share ideas. The wide spectrum of members is committed to the advancement of theory and practice of Computer Engineering and Technology Systems, Science and Engineering, Information Processing and related Arts and Sciences.

Dr. Chetan Chaudhary, Registrar, Mr. Arif Mansuri, Director Student welfare, Dr. Arun Kumar Dwivedi, Dean Academics, Dr. D. D. Shinde, Dean Admission, Dr. V. S. Narayana Tinnaluri, HOD, CSE Department and Ms. Pragati Pandit CSI coordinator and all faculties and school of Computing science & engineering students attended the event.



KANCHEEPURAM CHAPTER



Kancheepuram Chapter Organized a Technical Talk on Design the Thinking on 20th July 2018 at Intellect Design Arena Ltd, SIPCOT, Siruseri, Chennai. Dr M Senthil Kumar, Hon Secretary, CSI Kancheepuram Chapter presided over the event. The session started with the walk through inside 8012 Design Studio started around 5.10 PM and it went upto 6.15 PM hosted by Mr. Marks which was a great experience. More than 50 CSI members have attended the session. In the walk through, different prototypes were shown to realize the importance of the way of thinking. Then an interaction session about Design Hub of Intellect Arena Design Ltd., was held up which had given an overview about the happenings over there. The technical talk was started by Mr. Ramki, Design Thinking Practitioner, Intellect Design Arena Ltd., around 6.30 PM and later it was handed over to Mr. Anbu, Executive Coach, Intellect Design Arena Ltd. The session was very much interactive and whatever things shown in walk through were discussed. The entire session was motivational and inspiring. Dr. Sathyalakshmi, Professor / CSE, Hindustan Institute of Science and Technology coordinated the event.

The Chapter Organized a technical talk on Automation in IT Industries on 17th November 2018 at St Joseph's Institute of Technology, OMR, Chennai. Dr P Ravichandran, Principal, St Joseph's Institute of Technology presided over the event,

and the Chief guest of the event was Mr. Arunachalam Jayaraman, Senior Director-Technology, Virtusa, Chennai. The Session was started with the welcome address by Dr J Dafni Rose, HOD-CSE, St Joseph's Institute of Technology. Dr S Ravikumar, M C Member, Kancheepuram Chapter has presented the report of the Chapter. Mr S K Saravanan HOD-MCA, Valliammai Engineering College honored the Chief Guest with a memento. The Technical session started by Mr. Arunachalam Jayaraman, has elaborated the present trends in IT sectors Automation process and emphasized the importance of Artificial Intelligence in Automation Industries. More than 60 CSI members from various institutions have attended the session. In the technical talk, different prototypes were shown to realize the importance of the automation in the IT sectors. The session was very much interactive and whatever things shown in presentation were discussed. The entire session was motivational and inspiring. Dr Kalarani, HOD-IT, St Joseph's Institute of Technology appreciated the CSI Kancheepuram Chapter Management Committee members for their support extend to the successful completion of the event. Ms. D Chitra Devi of Hindustan Institute of Science and Technology has delivered the vote of thanks. Ms. L. Madhuridevi, of CSE, St Joseph's Institute of Technology coordinated the event.



Call for Paper for CSI Journal of Computing

(e-ISSN: 2277-7091)

Original Research Papers are invited for the CSI Journal of Computing, published on line quarterly (e-ISSN: 2277-7091) by the Computer Society of India (CSI). The Journal of Computing, offers good visibility of online research content on computer science theory, Languages & Systems, Databases, Internet Computing, Software Engineering and Applications. The journal also covers all aspects of Computational intelligence, Communications and Analytics in computer science and engineering. Journal of Computing intended for publication of truly original papers of interest to a wide audience in Computer Science, Information Technology and boundary areas between these and other fields.

The articles must be written using APA style in two columns format. The article should be typed, double-spaced on standard-sized (8.5" x 11") with 1" margins on all sides using 12 pt. Times New Roman font and 8-12 pages in length. The standard international policy regarding similarity with existing articles will be followed prior to publication of articles. The paper is to be sent to Prof. (Dr.) J. K. Mandal, Editor-in-Chief, CSI Journal of Computing (csi.journal@csi-india.org) with a copy to the Publisher Prof. A K Nayak in the email id : aknayak@iibm.in.

Prof. A K Nayak
Publisher

REGION-III

Devang Patel Inst. of Advance Tech. and Research, Anand



6-10-2018 – Event on Code War



6-10-2018 - The Mind Fizz

REGION-IV

Shri Shankaracharya Technical Campus, Bhilai



8-10-2018 to 13-10-2018 – Workshop on Data analysis & Machine Learning Using Python



8-10-2018 to 13-10-2018 - Workshop on Cloud Computing with Amazon Web Services (AWS)

REGION-V

B.V. Raju Institute of Technology, Narsapur



5-9-2018 & 6-9-2018 – Workshop on Python



23-10-2018 & 24-10-2018 – FDP on Latest Defensive Technologies in Cyber Security (LDTCS – 2018)

G Narayanamma Institute of Technology and Science, Hyderabad



15-9-2018 - 24 Hour Hackathon



28-9-2018 & 29-9-2018 - Workshop on Web Development using AngularJS

▶ FROM STUDENT BRANCHES ▶▶▶

REGION-V

G Pullaiah College of Engineering & Technology, Kurnool



10-9-2018 to 12-9-2018 – Workshop on Induction Oriented Programme

KKR & KSR Institute of Technology & Sciences, Guntur



28-9-2018 – Regional Level Technical Meet on Abhiyantrika on the eve of CSI 2nd year Student Branch celebrations

Anurag Group of Institutions, Hyderabad



1-11-2018 - Training program on PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan)



1-11-2018 to 13-11-2018 – FDP on Programming in C and DS using E Box Tool

Geethanjali Institute of Science & Technology, Nellore



3-11-2018 - Seminar on Cyber Security in Everyday Life by Mr. Harish

Chalapathi Institute of Engineering and Technology, Guntur



25-10-2018 to 11-11-2018 – Workshop cum Certification on Python Programming

New Horizon College of Engineering, Bangalore



8-9-2018 - Motivational Talk on How to overcome fear and what are the life changing angles for success by Dr. Rajdeep Manwani



9-11-2018 - Mini Project Competition

▶ FROM STUDENT BRANCHES ▶▶▶

REGION-V

K.S. Institute of Technology, Bangalore



23-9-2018 - Workshop on Data Science and Analytics



10-10-2018 - Workshop on Introduction to Virtualization

REGION-V

St. Joseph Engineering College, Mangaluru



10-11-2018 - Workshop on Image Processing and its Applications using MATLAB

HKBK College of Engineering, Bangalore



26-10-2018 - Fifth State Level CSI Technical Symposium OVERLOAD++

REGION-VI

Pillai HOC College of Engineering and Technology, Rasayani



28-7-2018 - Workshop on Web Development using ANGULAR 5

College of Engineering, Pune



23-10-2018 - Student Branch Inauguration by Dr. Bipin Kumar Scientise E, IITM, Pune & Mr. Abhay Pendse, Chapter Chairman

REGION-VII

Chennai Institute of Technology, Chennai



16-7-2018 - Seminar on Bitcoin and Blockchain



17-9-2018 - Project Competition

▶ FROM STUDENT BRANCHES ▶▶▶

REGION-VII

St. Joseph's College of Engineering, Chennai



30-8-2018 - Workshop on Career Guidance for Government School Students

Mount Zion College of Engineering & Technology, Pudukkottai



29-8-2018 - Workshop on IOT using Raspberry Pi

Valliammai Engineering College, Kattankulathur



10-8-2018 - Workshop on Deep Learning and its Applications



Student branches are requested to send their report to adm.officer@csi-india.org with a copy to mgsekaran1962@gmail.com

Kindly send **High Resolution Photograph** with the report.

KIND ATTENTION ! Prospective Contributors of CSI Communications

Fourth Coming Issues : December : Heritage Computing

Please note that Cover Theme for **January 2019 issue is Artificial Intelligence**. Articles may be submitted in the categories such as: Cover Story, Research Front, Technical Trends, Security Corner and Article. Please send your contributions by 20th December, 2018.

The articles should be authored in as original text. Plagiarism is strictly prohibited.

Please note that CSI Communications is a magazine for members at large and not a research journal for publishing full-fledged research papers. Therefore, we expect articles written at the level of general audience of varied member categories. Equations and mathematical expressions within articles are not recommended and, if absolutely necessary, should be minimum. Include a brief biography of four to six lines, indicating CSI Membership no., for each author with high resolution author photograph.

Please send your article in MS-Word format to Chief Editor, **Prof. (Dr.) S. S. Agrawal** in the email ids csic@csi-india.org with copies to the Publisher **Prof. A. K. Nayak**, in the email id : aknayak@iibm.in and **Bhabani Shankar Prasad Mishra**, KIIT University, Bhubanewar, in the email id : mishra.bsp@gmail.com

Issued on the behalf of Editorial Board, CSI Communications.

Prof. (Dr.) S. S. Agrawal
Chief Editor



Second International Conference



on

Advanced Computational and Communication Paradigms (ICACCP-2019)

ICACCP'19 PROJECT SHOWCASE

Date: February 25-28, 2019

Organized by:

Department of Computer Science and Engineering
Sikkim Manipal Institute of Technology

OBJECTIVES OF THE SHOWCASE	THEME OF SHOWCASE
<ul style="list-style-type: none"> To create a culture of innovation in an educational institute To develop entrepreneurial mindset among students To make students aware of latest industry trends To make students aware of government support available to them to carry forward their projects as entrepreneurial ventures To connect with likeminded innovators for further enhancement of the project 	<ul style="list-style-type: none"> Computational and Communication Paradigms State- of-the Art Design Technology and Application Science projects but not limited to ICACCP-2019 theme



CONTACTS:

Prof. Sourav Paul (9748445834)
 Prof. Chinmoy Kar (9874365360)
 Prof. S. K. Mishra (8927257899)
 Dr. Aniruddha Dey (8240761221)
 Email: icaccp2019@smit.smu.edu.in

Participant	Registration Fee
Indian	₹ 2,000
Foreign	USD 100

Submission through Easy Chair:
<https://easychair.org/conferences/?conf=icaccp2019>

IMPORTANT DATES:

Submission Deadline: 31st Dec 2018
 Acceptance Notification: 15th Jan 2019
 Final Submission Due: 31st Jan 2019
 For more details visit:

<http://www.icaccpa.in/>



INDIACom-2019

(IEEE Conference ID: 46181 | SCOPUS Indexed)



13th INDIACom; 2019 6th IEEE International Conference on

“Computing for Sustainable Global Development”

(13th – 15th March, 2019)

Organized by

Bharati Vidyapeeth's Institute of Computer Applications and Management (BVICAM), New Delhi

Technically Sponsored by

IEEE Delhi Section

Supported by

Computer Society of India (CSI), Divisions – II, IV and Delhi Chapter, Institutions of Electronics and Telecommunications Engineers (IETE), Delhi Centre, Indian Society for Technical Education (ISTE), Delhi Section and Guru Gobind Singh Indraprastha University (GGSIU), New Delhi

Paper Submission Deadline: 31st October, 2018 [No Further Extension]

Paper submission Link: <http://bvicam.ac.in/indiacom/submitPaper.asp>

Conference Website: <http://bvicam.ac.in/indiacom/>

Announcement and Call for Papers

INDIACom-2019 is aimed to invite original research papers in the field of, primarily, Computer Science and Information Technology and, generally, all interdisciplinary streams of Engineering Sciences, having central focus on sustainable computing applications, which may be of use in enhancing the quality of human life and contribute effectively to realize the nations' vision of sustainable inclusive development using Computing. **INDIACom-2019** will be an amalgamation of four different Tracks organized parallel to each other, in addition to the 05th International Workshop on Information Engineering and Management (IWIEM-20197) and few theme based Special Sessions, as listed below:-

Track #1: Sustainable Computing

Track #2: High Performance Computing

Track #3: High Speed Networking & Information Security

Track #4: Software Engineering & Emerging Technologies

Track #5: Theme Based Special Sessions

Instruction for Authors

Authors from across different parts of the world are invited to submit their papers. Authors should submit their papers online at <http://www.bvicam.ac.in/indiacom/loginReqSubmitPaper.asp>. New authors should first sign up and create an account on <http://www.bvicam.ac.in/indiacom/addMember.asp> to log in and submit paper. Only electronic submissions will be considered. Paper submission, as E-Mail attachment, will not be considered.

Important Dates

Submission of Full Length Paper	31 st October, 2018	Paper Acceptance Notification	15 th January, 2019
Submission of Camera Ready Copy (CRC) of the Paper	29th January, 2019	Registration Deadline (for inclusion of Paper in the Proceedings)	29th January, 2019

Accepted Papers will be published in **IEEE Xplore**, which is indexed with world's leading **Abstracting & Indexing (A&I)** databases, including **ISI, SCOPUS, DBLP, EI-Compendex, INSPEC, Google Scholar**, etc. Further details are available at www.bvicam.ac.in/indiacom. All correspondences, related to INDIACom-2019, must be addressed to:

Prof. M N Hoda

General Chair, INDIACom-2019

Director, Bharati Vidyapeeth's Institute of Computer Applications and Management (BVICAM)

A-4, Paschim Vihar, Rohtak Road, New Delhi-110063 (INDIA)

E-mails: conference@bvicam.ac.in, indiacom2019@gmail.com

Tel.: 011-25275055 TeleFax: 011-25255056, 09212022066 (Mobile)