GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

[Approved by AICTE NEW DELHI, Affiliated to JNTUK Kakinada]

[Accredited by National Board of Accreditation (NBA) for B.Tech. CSE, ECE & IT – Valid from 2019-20 to 2021-22]

Kommadi, Madhurawada, Visakhapatnam – 530048

Department of Computer Science and Engineering

COSCENGER'S INSPIRE

2022

Volume - 6

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

[Approved by AICTE NEW DELHI, Affiliated to JNTUK Kakinada]

[Accredited by National Board of Accreditation (NBA) for B.Tech. CSE, ECE & IT – Valid from 2019-20 to 2021-22] Kommadi, Madhurawada, Visakhapatnam – 530048

Department of Computer Science and Engineering

Institute Vision

To emerge as an acclaimed centre of learning that provides value-based technical education for the holistic development of students

Institute Mission

- Undertake the activities that provide value-based knowledge in Science, Engineering, and Technology
- Provide opportunities for learning through industry-institute interaction on the state-of-the-art technologies
- Create a collaborative environment for research, innovation, and entrepreneurship
- Promote activities that bring in a sense of social responsibility

Department Vision

To evolve into a Centre of learning that imparts quality education in Computer Science and Engineering to produce highly competent professionals.

Department Mission

- Impart computing and technical skills with an emphasis on professional competency and human values.
- Enrich the learning aptitude to face the dynamic environment of the Computer Industry.
- Enhance the analytical and problem-solving capability through contests and technical seminars.

Program Educational Objectives

After successful completion of the program, the graduates will be able to:

PEO-1: Apply both fundamental and advanced knowledge to analyze, design and develop innovative computing products.

PEO-2: Design and develop interdisciplinary and innovative software systems for real-world problems.

PEO-3: Inculcate soft skills, ethical conduct and an ability to engage in lifelong learning to serve the societal and environmental needs.

Program Specific Outcomes

Engineering Graduates will be able to:

PSO-1: Develop real-time applications by applying software engineering principles and implementing with emerging technologies in the field of Computer Science and Engineering.

PSO-2: Apply the knowledge of data analytics, soft computing, information security and other domains in Computer Science and Engineering for developing software systems.

From the Principal's DESK

It gives me an immense pleasure to note that the Department of Computer Science and Engineering is bringing out the departmental magazine **COSCENGER'S INSPIRE - 2022**. The learning being a continuous process, the college provides a platform for every student to develop their learning skills through various academic and co-curricular activities including reading the books and magazines. I am quite confident that this magazine will enlighten the readers with the various contemporary technical articles along with the thoughts, ideas, feelings and aspirations of our creative and budding talents. The magazine will certainly be a good source of guidance for the faculty as well as for the coming batches of students. This magazine is like a mirror which reflects the clear picture of all sorts of activities undertaken by the CSE Department and develops writing skills amongst students in particular and teaching faculty in general.

I would like to convey my heartiest congratulations to the Head of CSE Department, teaching and non-teaching staff, editorial board and students of the Computer Science and Engineering Department for bringing this edition of Magazine **COSCENGER'S INSPIRE - 2022**. I also applaud the contributors for putting together their stimulated thoughts in the articles contributed by them. I am hopeful that this magazine shall not only develop the taste for reading amongst students but also develop a sense belonging to the institution as well.

Wish you all the best.

Jai Hind

-   **Dr. RajKumar Goswami**

EDITORIAL

We are happy to bring out an issue of the departmental magazine "**COSCENGER'S INSPIRE-22**" for the Academic year 2021-22.

This issue has the faculty article by Mrs. KVS Monica, Assistant Professor, Student articles, snippets on technology, and other regular features. The student's department activities in the preceding semester/year have been listed in brief.

We thank all the department members for continuous help bringing out this issue.

Editorial Team:

Faculty Co-Ordinator: Mr. Addanki Udaya Kumar

Assistant professor,

Department of CSE.

D. SreeLekha   19JG1A0533

B Sreenidhi   19JG1A0511

L.Gopika Varshini   20JG1A0554

K Sneha Latha   20JG1A0545

A Pallavi   20JG1A0502

M Udaya Sri   20JG1A0570

M Varshini   20JG1A0565

D. Swapana   20JG1A4214

For Any Suggestions, Mail to: csemagazine@gvpcew.ac.in

Table of Contents

Fake Online Reviews Detection Using Semi-Supervised and Supervised Learning

Mrs. KVS Monica

Assistant Professor

Department of CSE

Abstract

Today's business and commerce is greatly impacted by Online reviews. These Online reviews are helping the users in making decisions regarding the purchase of online products. Online reviews are a great source of reputation for the companies. These reviews also have a great impact on promotion and advertisement of products and services. Hence some individuals or groups are trying to manipulate these online reviews for their own interests. This paper gives some semi-supervised and supervised text mining models to detect the fake online reviews and compares the efficiency in both the techniques on a dataset containing the reviews of some hotels.

1. INTRODUCTION

A lot of advancement and change in technology is seen day by day. Old technologies are constantly being replaced by the new ones. These new technologies are helping the people to do their work efficiently. An example for such an evolution in technology is online marketplace. We can shop online, and we can make reservations to buy the products in the online marketplace. Almost every one of us who want to purchase an item or any particular thing will check the reviews of that particular thing in order to take a decision whether to buy or not. Hence these online reviews are a great source of reputation for the companies. These reviews also have a great impact on promotion and advertisement of products and services. As a part of these fake online reviews are also becoming a major concern. People can also make fake reviews to promote their own products which is a great harm for the other online business stake holders and product users. even competitive companies can damage the reputation of the other companies by writing negative fake reviews.

Many approaches have been studied by researchers for the detection of fake online reviews. Some are based on the content of the review and some are based on the behavior of the user who is posting the reviews. Content based approach focuses on the content of the review i.e, the text of the review where as the User behavior based approach focuses on number of posts that the reviewer made, country, ip-address etc. Most of the proposed approaches are supervised classification models. Some researchers have also worked with semi-supervised models. They are being introduced for the lack of reliable labelling of the reviews.

In this paper, A few supervised and semi-supervised classification approaches for detecting fake online reviews are studied and implemented. In semi-supervised learning, Expectation-maximization algorithm is used. Decision tree,

Naive bayes and Support Vector Machines (SVM) are used as classifiers. The content-based approach i.e, the content of the review is mainly focused on. As features sentiment polarity, frequency count and the length of the review is used.

2. PROPOSED WORK

A) Dataset Description:

In this paper, a dataset have been used which consists of 1600 reviews, out of which there are 800 reviews of positive sentiment polarity and 800 reviews of negative sentiment polarity. Out of the 800 reviews of positive sentiment polarity, 400 are truthful reviews and 400 are fake reviews. Similarly the other 800 reviews of negative sentiment polarity also has 400 truthful reviews and 400 fake reviews. For the purpose of evaluations, a tag of '1' denotes truthful reviews and a tag of '0' denotes fake reviews. The reviews are collected from kaggle. It has reviews from different sources like MTurk, TripAdvisor, Web etc.

B) Proposed Methodology

For the fake online reviews detection, we start with the raw data. A dataset which is labeled by the previous researchers is used. Unnecessary text like prepositions and articles are removed. Then the text data was converted into numerical form to be suitable for the classifier. Most important features are extracted and the classification took place. Steps like removing inconsistency, removing redundancy, handling missing values etc are not required. Instead merging the texts, creating a dictionary and mapping of text to numerical values are needed as a part of preprocessing. Sentiment polarity, length of the review and frequency count are used as features. The process of feature extraction is shown in below figure.
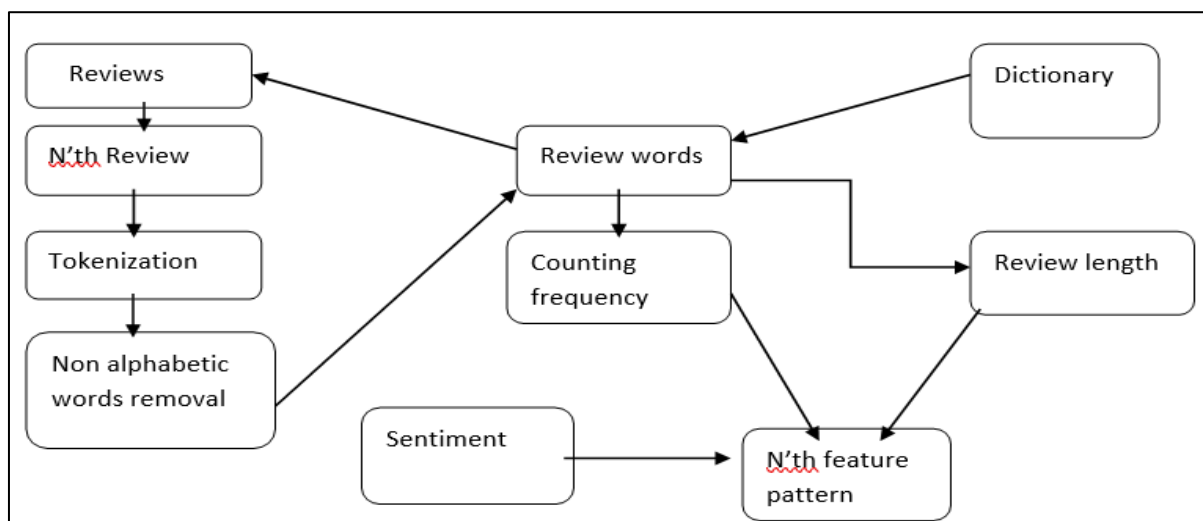
From the above figure, it is clear that we are working on the nth review, its features are generated in the following procedure.

1. Firstly, each review goes through tokenization process. Then, unnecessary words are removed, and generation of candidate feature words takes place.
2. Each and every candidate feature word is checked against the dictionary and if the entry of it is available in the dictionary, its frequency is counted and is added to the column in the feature vector which corresponds to the numeric word of the map.
3. Along with counting frequency, The Reviews length is also measured and added to the feature vector.
4. Finally, the sentiment score present in the dataset is added in the feature vector. We have assigned zero to negative sentiment and positive valued in feature vector to positive sentiment.

Both supervised and semi-supervised classifications are implemented. For semi-supervised classification, we have used Expectation-Maximization (EM) algorithm. Expectation Maximization algorithm is designed to label unlabeled data to be used for training. Expectation Maximization algorithm is as given below.

Expectation Maximization algorithm

INPUT: Labelled instance set L, and unlabelled instance set U.
OUTPUT: Deployable classifier, C.

```
1: C ← train(L); //Derivation of classifier from the labeled dataset
2: PU = Ø; //Initially null value is assigned to PU
3: while true do
4: PU = predict(C, U); // labeling of unlabelled data
5: if PU same as in previous iteration then
6:    return C; //returning the classifier
7:   end if
8:   C ← train(L ∪ PU); //Derivation of classifier from the combined set of labeled and unlabeled data
9: end while
```

The classifier is derived from the labeled dataset. That classifier is then used to label the unlabeled data. Let the predicted set of labels be PU. Then another classifier is derived from the combined sets of both labeled and unlabeled data and is used to classify the unlabeled data again. This process is repeated until PU gets stabilized. After getting a stable PU set, we trained the classification algorithm with the combined set of both labeled and unlabeled data and deploy it for predicting test dataset. In simpler words algorithm works in following two steps:

E-step

Estimates the expectation of the missing value i.e, the unlabelled class information. This step corresponds to performing classification of each unlabelled document. Probability distribution is

calculated using current parameter.

M-step

Maximizes the likelihood of the model parameter using the previous computed expectation of the missing values as if were the true ones.

Support Vector Machine (SVM), Naive Bayes (NB), Decision tree classifiers with Expectation Maximization algorithm are used in this paper. The sophisticated library of these classifiers is provided by Scikit Learn package of Python programming language. Support Vector Machine, Naive bayes and Decision tree classifiers are used in Supervised learning. The highest accuracy is obtained for supervised Decision tree classifier. In addition to this we have developed a

module in which the user can dynamically enter the review and prediction will be made on it.

A web application is created in which there will be Admin login, user registration and user login. All the accuracies of the different classifiers are shown in the Admin login in their respective techniques i.e, the supervised or semi-supervised learning. In the User login, the user will be able to give the review dynamically which will be replicated in the admin's login for the prediction and when clicked on predict, the review will be predicted using Supervised Decision tree classifier as that got the highest accuracy when tested with the dataset. The result will be sent to the users login and any user who logs in will be able to see all the reviews entered by the users and their results.

Fig. 2 Prediction of User entered reviews

3. RESULTS AND PERFORMANCE ANALYSIS

A) Results

Expectation Maximization algorithm is implemented for semi-supervised classification in this paper.   As

classifiers Support Vector Machine, Naive bayes and Decision tree classifier are used. For semi supervised classification with SVM , an accuracy of 62.66% is found , with Naïve bayes an accuracy of 62.79% is found and with Decision tree classifier an accuracy of 80.66% is found.

Supervised classification techniques are also tried out to know the performance of our dataset. For supervised classification with SVM, an accuracy of 66.33% is found, with Naïve bayes an accuracy of 78.29% and with Decision tree classifier got an accuracy as 90.66%. Apart from this, another module is developed in which users can dynamically enter the reviews and they will be predicted as fake or truthful based on supervised Decision tree classifier as that got the highest accuracy.

B) **Performance Analysis**

The performances of our implemented techniques are shown using the histogram below.
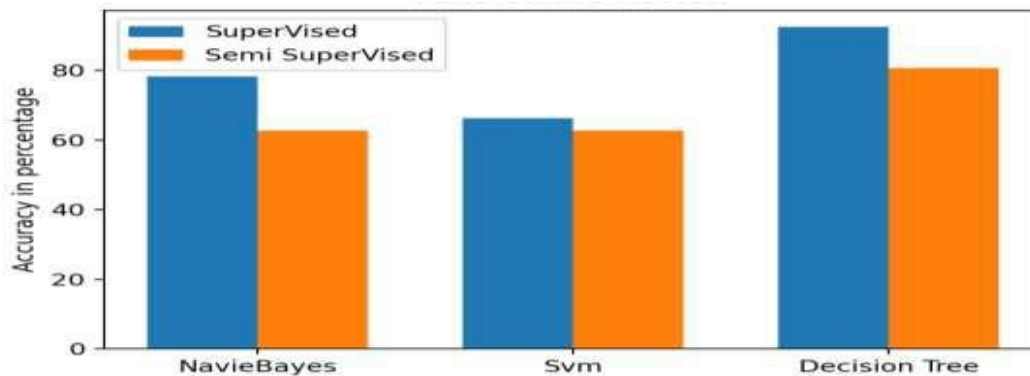

Fig.3 Histogram showing the performances of the implemented techniques

In this research, features are carefully chosen in order to reduce over fitting. We took the length of the review as a feature as it has a great significance. Highest accuracy of 90.66% is found by using Supervised classification with Decision tree classifier. The findings are summarized in the following table1.

Table 1. COMPARATIVE SUMMARY OF SEMI-SUPERVISED AND SUPERVISED LEARNING TECHNIQUES ON HOTELREVIEWS DATASET

Features	Algorithm type	Classifier used	Accuracy
Word frequency count, Sentiment Score, Length of the review	Semi-supervised	Decision Tree	80.66
		Naive Bayes	62.79
		SVM	62.66
	Supervised	Decision Tree	90.66
		Naive Bayes	78.29
		SVM	66.33

4. CONCLUSION AND FUTURE WORK

In this work three semi-supervised and supervised classification techniques for the detection of fake online reviews are implemented. In order to create a better feature set, features from several research works are combined. The highest accuracy is found in Supervised Decision tree classifier. In this paper, we have just

worked on the reviews. User behaviour can also be combined with texts to have a better model for classification. The evaluation of the effectiveness of the proposed methodology can be done for a larger data set.

REFERENCES

[1] Chengai Sun, Qiaolin Du and Gang Tian, "Exploiting Product Related Review Features for Fake Review Detection," Mathematical Problems in Engineering, 2016.

[2] A. Heydari, M. A. Tavakoli, N. Salim, and Z. Heydari, "Detection of review spam: a survey", Expert Systems with Applications, vol. 42, no. 7, pp. 3634–3642, 2015.

[3] M. Ott, Y. Choi, C. Cardie, and J. T. Hancock, "Finding deceptive opinion spam by any stretch of the imagination," in Proceedings of the 49th Annual Meeting of the Association for Computational Linguis- tics: Human Language Technologies (ACL-HLT), vol. 1, pp. 309–319, Association for Computational Linguistics, Portland, Ore, USA, June 2011.

[4] J. W. Pennebaker, M. E. Francis, and R. J. Booth," Linguistic Inquiry and Word Count: Liwc," vol. 71, 2001.

[5] S. Feng, R. Banerjee, and Y. Choi, "Syntactic stylometry for deception detection," in Proceedings of the 50th Annual Meeting of the Association for Computational Linguistics: Short Papers, Vol. 2, 2012.

[6] J. Li, M. Ott, C. Cardie, and E. Hovy, "Towards a general rule for identifying deceptive opinion spam," in Proceedings of the 52nd Annual Meeting of the Association for Computational Linguistics (ACL), 2014.

Capacity Against Covitude: **The Time for AI-Driven Covid Planning**

Praseeda Saripalle
(20JG1A4247)
Department of CSE (AL-ML)

1. Introduction

The Unprecedented Global Health Crisis is affecting all parts of society. India is not an Exception. The first wave of the Covid19 pandemic is unexpected, the second wave is a great lesson, and the third wave shouldn't be unprepared. Therefore, we tried presenting our proposal to the government and to the corporations to combat the covid third wave using AI as the core foundation.

The core of the problems we identified broadly are overall unpreparedness, medical infra capacity planning, technology ramp-up while resolving the ground level issues, and psychological support to the patients in terms of diagnosis.

If we go into detail, the overall Unpreparedness about the whole scenario caused excess mortality- for e.g., 4.9 million excess deaths occurred in 2020 and the 2nd wave of deaths is 40% more than the first wave due to this covid pandemic. Capacity building is highly critical in terms of healthcare workers, beds, oxygen supply, medicines, etc. Though technology exists, datasets were not available, and they were evolving, as it is a new chapter in the medical world. While this whole chaos exists, Govt attempted to develop Arogya Setu as an informative app, however, it has to be upgraded to a self-diagnostic level.

Pandemic preparedness should aim to Strengthen Existing Systems rather than develop new ones. A Comprehensive Study and Planning are needed for the success of Public Health Responses and Recovery from the Pandemic.

1. Proposed Methodology

As we all know that data is the fuel for entire analytics, so as part Data pre-processing we did go through data cleaning, understanding missing values, standardization etc, and then performed a detailed exploratory data analysis that helped us to understand high risk zones/segments.

We initially performed a detailed due-diligence, collected data sources related to the covid cases around the world, symptoms (covid affected and non-affected cases), severity of the affected cases, covid death records and district level records. We performed a detailed Exploratory Data Analysis, visualized the data for a easier understanding, and derived most of the conclusions. Some of our conclusions alerted that Maharashtra has the highest number of cases hitting 5.9M. Some of the states which require better planning for the future waves (which had a high-risk zone) were Maharashtra, Kerala, Telangana, Tamil Nadu, Punjab. Also, State wise Cured Data is Considered for Future Logistics Planning. We also made a statistical analysis, considering mean, median and so on. wherein we observed that confirmed, cured and death cases had almost the same mean. On correlation analysis, we saw that there was fairly a strong positive correlation between confirmed and the recovered cases.
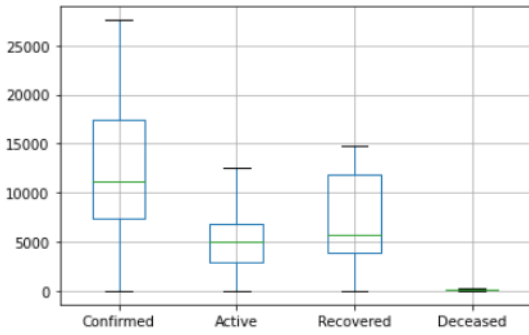
Fig 1: Box-plot of the total confirmed, active, recovered and decreased cases National wide

Using the time-series data, we were able to predict caseload till Aug 2021 using the ARIMA model. As per our prediction over 1M cases are projected for the future, and we assumed 10% would need hospital intervention. This information is the ignition for building overall medical infrastructure capacity.

Apart from this, we developed a tool for early detection using 4 ML algorithms which can be augmented to Govt Arogyasetu App. As app users increase, the performance of the model becomes more intelligent, this can be further used for covid dependent issues and their planning. At that point, this app can be used for the subscription model also.
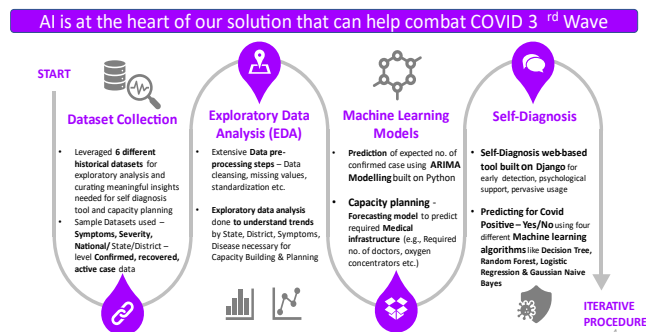
Fig 2: Data Flow Diagram for proposed approach

2. AutoRegressive Integrated Moving Average (ARIMA) Model

We considered National Level Daily Time Series Data (Jan 2021 to June 2021) and Predicted Caseload till Aug 2021 using ARIMA Model. We used this prediction for Future Medical Logistics and Capacity Building. ARIMA is, an AutoRegressive Integrated Moving Average, is a statistical analysis model that uses time series to either better understand the data set or to predict future trends.

A statistical model is autoregressive if it predicts future values based on past values. In our case, we have used ARIMA Model to predict the number of cases for the period of the next one month, for the planning of Future Medical Logistics and Capacity Building.
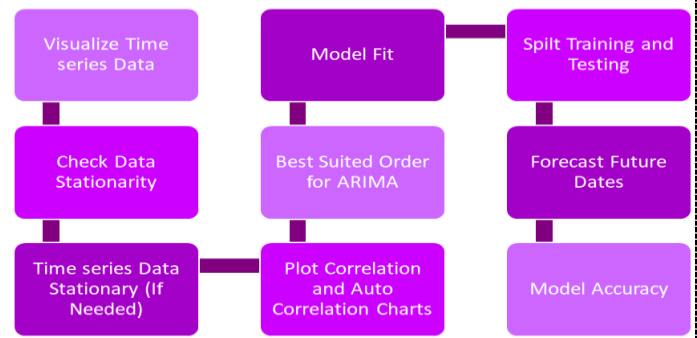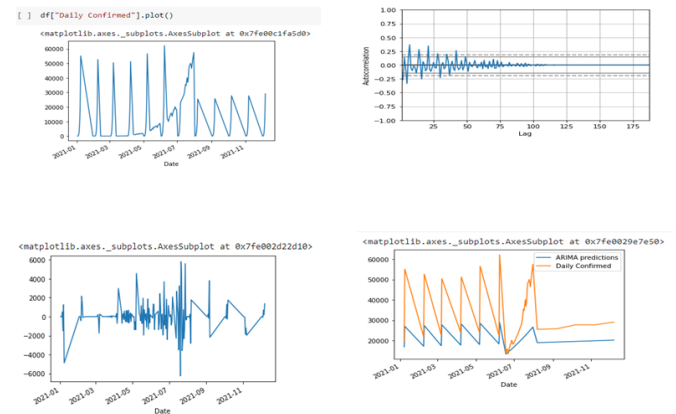

**Fig 3: ARIMA model**

Fig 4: Output for Arima Model

The series of steps that we followed in building up the model was, firstly to visualize the time series data, then to check the data for stationarity- A stationary time series data is one whose properties do not depend on the time, That is why time series with trends, or with seasonality, are not stationary. the trend and seasonality will affect the value of the time series at different times,

On the other hand for stationarity it does not matter when you observe it, it should look much the same at any point in time. In general, a stationary time series will have no predictable patterns in the long-term. If the data, wasn't stationarity, we made it stationary by converting it. We then did go through plot correlation and plotted auto correlation charts. Later on, we found the best order for ARIMA Model. Further, we did go through the best model fit, dividing the data into training and testing data. Once the predictive model is done we tried to forecast the future dates and then evaluated the model accuracy.

Time Series forecasting is really useful when we have to take future decisions or we have to do analysis, we can quickly do that using ARIMA, there are lots of other Models from we can do the time series forecasting but ARIMA is really easy to understand. This was the journey through ARIMA Model.

We created a web-based Django framework. The user has to respond to 33 questions and the machine predicts whether the person is potentially tested Covid based on 4 ML algorithms-Random Forest. Decision tree, Naies Bayes, and Logistic regression.

The user selects various symptoms and submits the requirement. It goes to the system as a test record and gets the results from the already trained dataset and it is tested against various algorithms namely Random Forest. Decision tree, GS Naies Bayes, and Logistic regression. and the max no. of responses among the four algorithms can be tested as potential covid positive or not.
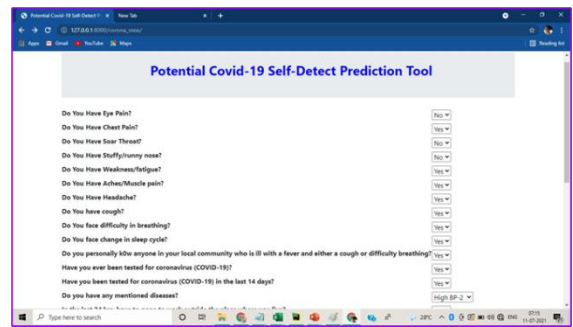
Fig 5: Web-based Tool Front-End Functionality

We also collected the As-Is infrastructure like doctors available, hospitals, nurses, and health workers. We made certain assumptions like doctor ratio, nurse ratio, and bed ratio. We assumed that 10% of them require hospital intervention and projected them to be capable. So, we recommend 1000 more doctors,5000 more nurses,1lac beds,43MT liters per day of oxygen, and 170 more hospitals assuming that 1lac people would be hospitalized in these 1M cases.
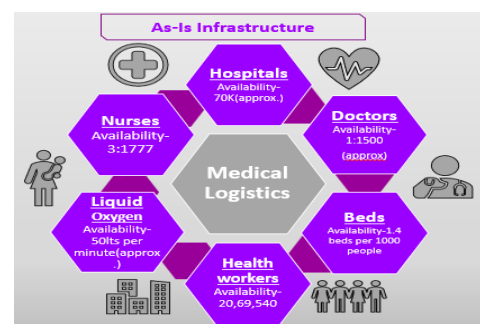

Fig 6: AS-IS Infrastructure

| Type	Norm	Assumed Hospitalized	Projected Covid Patients	Assumed Direct Intervention (10%/20%)	Actual Needed
Doctors	1-1000 1:Population	1 to 100 1:Patients	10,00,000	1,00,000	1,000
Nurses	1-300	1 to 20	10,00,000	1,00,000	5,000
Beds	3 - 1000 (US Standard)	1 to 1	10,00,000	1,00,000	1,00,000
Oxygen	60 lts per min	NA	10,00,000	2,00,000	~43 MT per day
Hospitals	600 bed capacity	NA	10,00,000	100000	~170 Hospitals

Fig 7: Key Assumptions
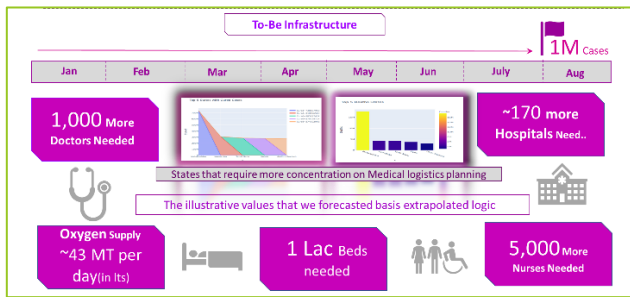
Fig 8: TO-BE Infrastructure

3. Business Solution

Further, the extensive tool usage by free access leads to an important patient analytics engine. These analytics can be further used by Govt and Corporates for various post covid services

Corporates can plan for vaccination drives/ oxygen for employees. They can use this database for pharma planning and also for customization of medical services based on individual symptoms and requirements.

We understood different Business Users for the solution. Our thoughts included for the End Consumers, for the Corporates and for the Indian Government. For the End Consumer, we developed a mechanism created especially during shortage of resources like test kits, which help for a early detect. We have based the prediction from Self-diagnosis tool where a corporate can plan **for medical facilities** that includes **vaccination drives/ oxygen concentrators, medicines** for employees and post covid medical support on a subscription-based model.

Our model can also predict **future number of cases** so that **Government can plan** the needed amount of medicines, doctors, nurses, oxygen concentrators, health care workers, beds and so on to meet medical demand.

4. Conclusion

At the outset, after performing the prediction of cases through ARIMA model, we recommend 1000 more doctors,5000 more nurses,1lac beds,43MT lts per day oxygen and 170 more hospitals assuming that 1lac peoples would be hospitalized in these 1M cases as of August 2021. We have extended the Covid-Predict Web-Based Solution to the common users, corporates and the Indian Government.

References

[1] Fattah, Jamal & Ezzine, Latifa & Aman, Zineb & Moussami, Haj & Lachhab, Abdeslam. (2018). Forecasting of demand using ARIMA model. International Journal of Engineering Business Management. 10. 184797901880867. 10.1177/1847979018808673.

[2] Rish, Irina. (2001). An Empirical Study of the Naïve Bayes Classifier. IJCAI 2001 Work Empir Methods Artif Intell. 3.

[3] Peng, Joanne & Lee, Kuk & Ingersoll, Gary. (2002). An Introduction to Logistic Regression Analysis and Reporting. Journal of Educational Research - J EDUC RES. 96. 3-14. 10.1080/00220670209598786.

[4] Patel, Harsh & Prajapati, Purvi. (2018). Study and Analysis of Decision Tree Based Classification Algorithms. International Journal of Computer Sciences and Engineering. 6. 74-78. 10.26438/ijcse/v6i10.7478.

[5] Ali, Jehad & Khan, Rehanullah & Ahmad, Nasir & Maqsood, Imran. (2012). Random Forests and Decision Trees. International Journal of Computer Science Issues(IJCSI). 9.

Bacterial Foraging Optimization Algorithm & Applications

Sesha Sri Laasya Kandukuri
20JG1A0595
Department of CSE

1. Introduction

The bacterial Forging Algorithm was developed based on Passino's foraging behavior of the E. coli bacteria. What does foraging mean? It is the method of searching for food or other provisions. So, this algorithm is used to explain the foraging nature of bacteria (E.coli) to obtain as much as possible(maximum) energy during the searching process. The inspiration behind this algorithm is nature. This algorithm has gained a lot of attention among engineers, and researchers & is being adapted in many scenarios due to its simplicity and ease of implementation.

2. BFO algorithm

The BFO consists of three major mechanisms namely chemotaxis, reproduction, and elimination-dispersal

- **Chemotaxis**: This process is described as the movement or the orientation of a micro-organism concerning the chemical concentration of the substance on which movement takes place.
- **Reproduction:** E.coli reproduces by binary fission. During this type of asexual reproduction, the single DNA molecule replicates and both copies attach, at different points, to the cell membrane.
- **Elimination Dispersal**: this is the removal of bacteria due to surrounding environmental conditions and unexpected conditions occurring in the bacterial colony.

The following relations are used to design the bacterial foraging algorithm:

A. Chemotaxis

$$\theta^i(j+1,k,l) = \theta^i \ (j,k,l) + C(i)\frac{\Delta(i)}{\sqrt{\Delta^T(i)\Delta(i)}} \qquad (1)$$

The motion in the bacteria can be in two ways tumble or run/swim.

The function $\theta^i(j+1,k,l)$ represents the bacteria present in a location for j^{th} chemotactic, k^{th} reproduction, and lth elimination dispersion step.
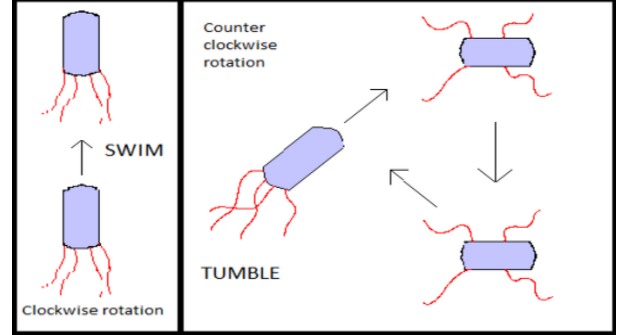

Fig. 1: Movements in E.coli bacteria in clockwise & counter-clockwise direction

B. Reproduction

$$\sum_{j=1}^{Nc} J(i,j,k,l) \qquad (2)$$

The health condition of the bacteria is determined by the sum of the step fitness during its life. N_c gives maximum step takes in the chemotaxis process. All the bacteria are arranged in the descending order of their health status.

C. Elimination-Dispersion

The chemotaxis provides the foundation for local search and reproduction helps in convergence of the algorithm, but these conditions are not sufficient for global optimization. The process of dispersion occurs after several cycles of reproduction. Later bacteria are chosen on the present probability P_{ed} to be eliminated and move on to next location.
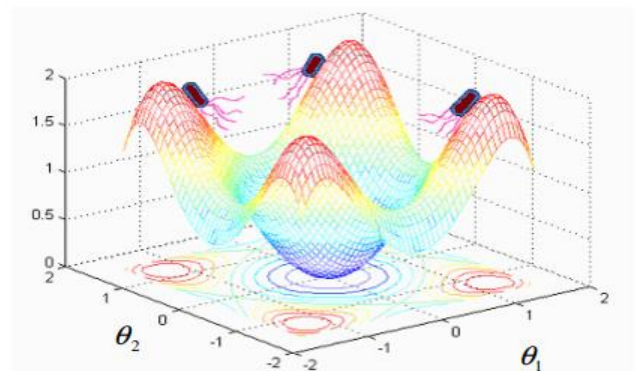

Fig. 2: A bacteria on a multi-modal function surface.
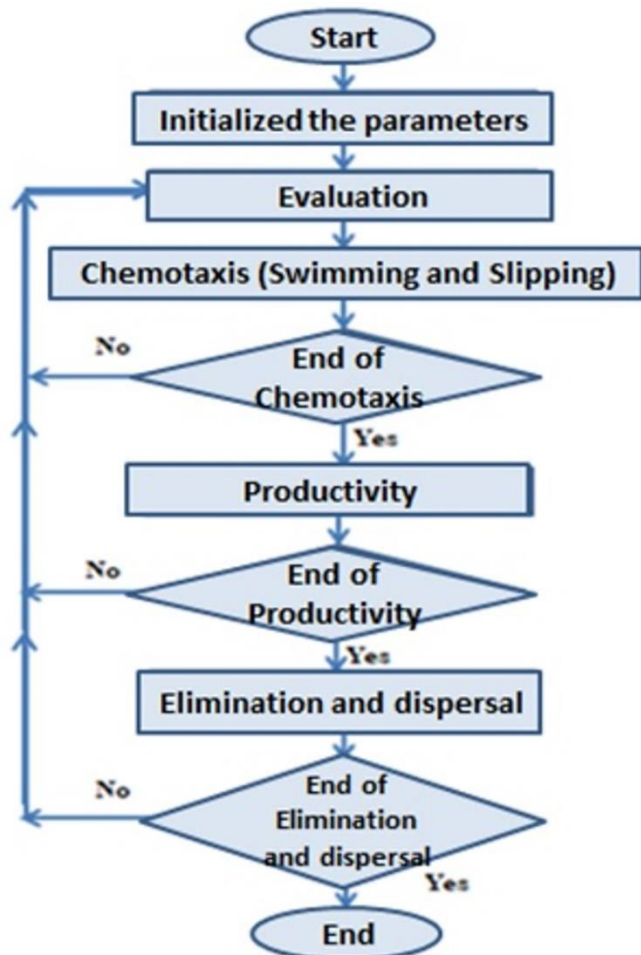
Flow Chart of BFO algorithm

Fig 3: Flowchart for BFO

Parameters

Step1: Parameter initialization.

    n: the dimension of search space.

    S: number of the bacterium.

    Nc: chemotactic steps

    Ns: swim steps

    Nre: Reproductive steps

    Ped: the probability of elimination

    C(i): step size

Step2: Elimination -dispersal loop: l=l+1

Step3: Reproduction loop: k=k+1

Step4: Chemotaxis loop: j=j+1

— Take a chemotactic step (i=1,2,3….S)

— Compute fitness function and save this value

— and save this until we find a better run.

— Tumble movement: In random direction [-1,1].

— Swimming process.

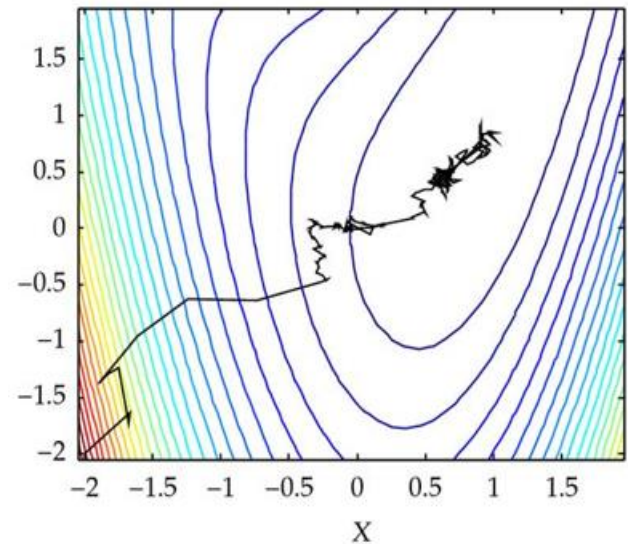— Go to the next bacterium(i+1): if i! =S process the next bacteria.
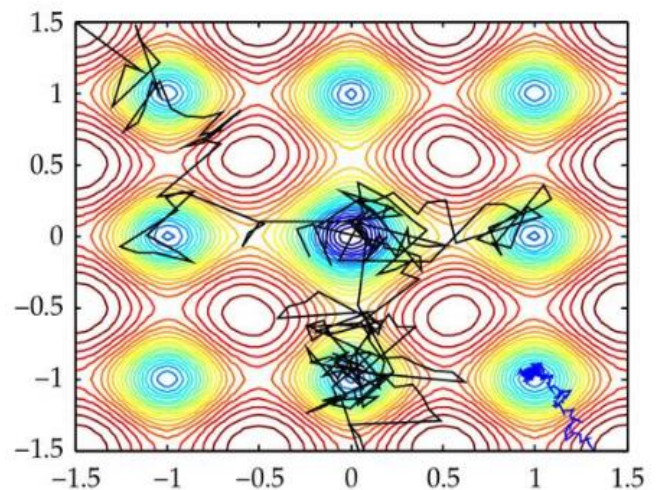

Fig 4: Bacterial trajectories

Fig. 5: Bacterial trajectories

Step5: check if j<chemotactic steps, continue chemotaxis since the life of the bacteria is not over.

Step6: Reproduction process

Step7: Elimination and dispersal.

Step8: check if the elimination-dispersion loop<elimination and dispersal steps, then go to step2, otherwise, STOP and display the result.
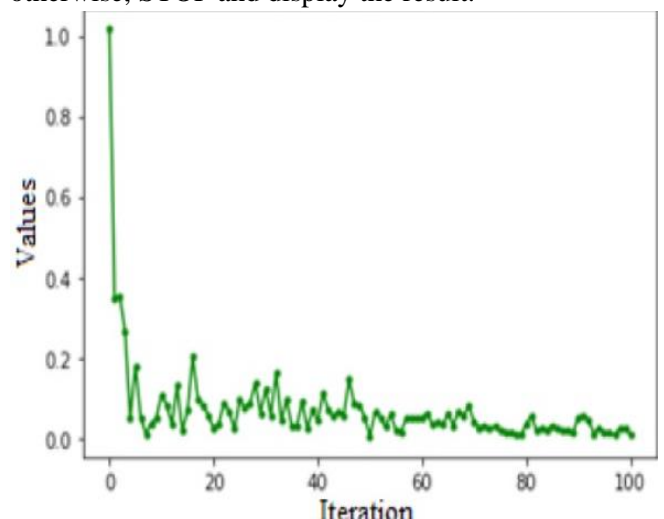

Fig. 6: The best value in each iteration

3. Applications

Some of the outstanding applications of bacterial foraging algorithm are:

1. A Bio-inspired trajectory planning method for robotic manipulators based on improved bacteria foraging optimization algorithm.
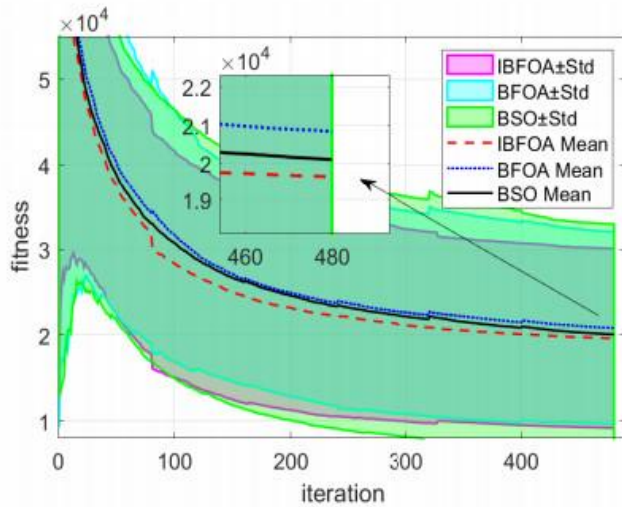

Fig. 7: BFO in robotic manipulators

2. PI Controller Based Switching Reluctance Motor Drives using Smart Bacterial Foraging Algorithm.
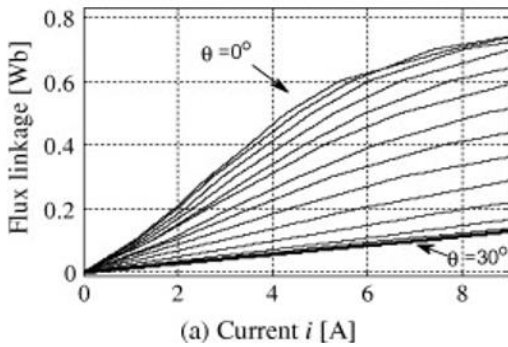

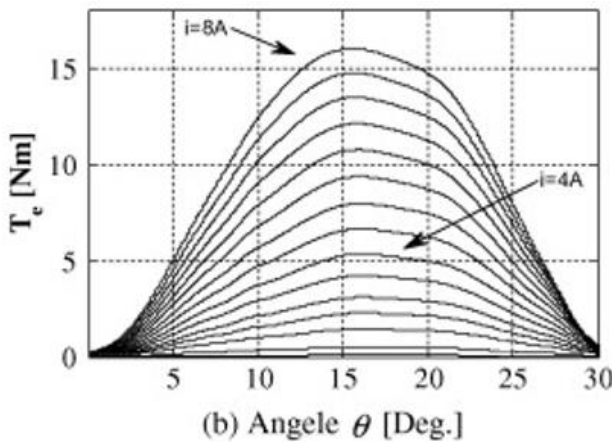**Fig. 8: Flux linkage vs current**

Fig. 9: Angular graph for motor drivers.

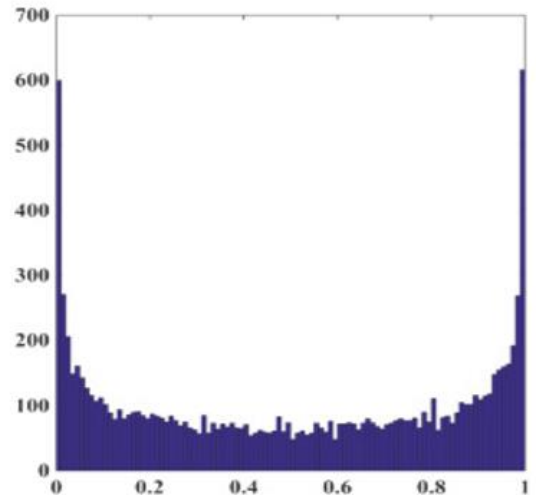3. Application for training kernel extreme learning machine.

Fig. 10: Logistic map in kernel extreme learning machine
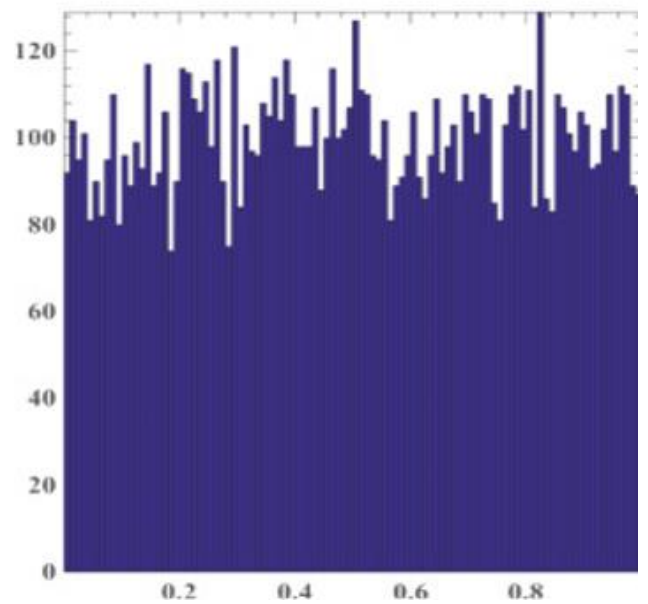

Fig. 11: Rand map in kernel extreme learning machine

4. Application of Modified Bacterial Foraging optimization algorithm for optimal placement and sizing of Distributed Generation.
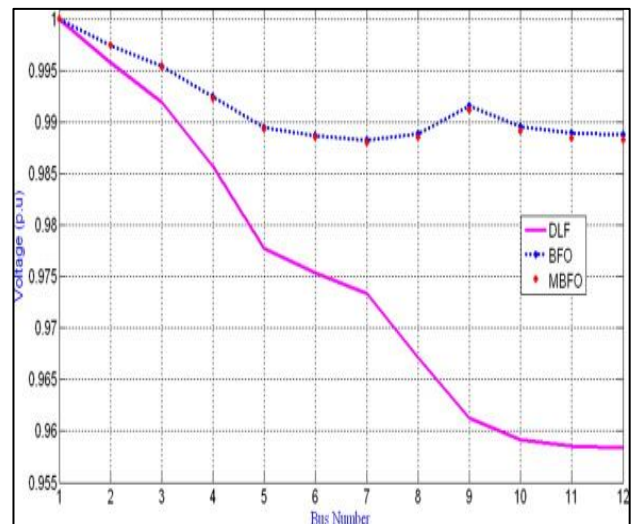

Fig. 12: Distributed generation (voltage vs bus numbers)

5. Bacterial foraging optimization algorithm with particle swarm optimization strategy for global numerical optimization.
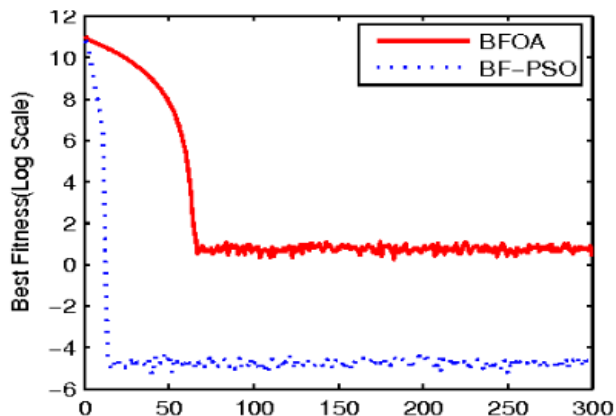

Fig. 13: Convergence results of BFOA for uni-modal functions.

4. Conclusion

BFOA is currently gaining popularity due to its efficacy over other swarm and evolutionary computing algorithms in solving engineering optimization problems. It mimics the individual as well as grouped foraging behaviour of E.coli bacteria that live in our intestine. The analysis reveals how the dynamics of reproduction help in avoiding premature convergence. In recent times, a symbiosis of swarm intelligence with other computational intelligence algorithms has opened new avenues for the next generation Bacterial Foraging Optimization Algorithm 53 computing systems. The chapter presents an account of the research efforts aiming at hybridizing BFOA with other popular optimization techniques like PSO, DE, and GA for improved global search and optimization.

REFERENCES

[1] Chen Guo, Heng Tang, Ben Niu, Chang Boon Patrick Lee, "A survey of bacterial foraging optimization", Neurocomputing, Volume 452, 2021, Pages 728-746, ISSN 0925-2312,

https://doi.org/10.1016/j.neucom.2020.06.142.

[2] Das, Swagatam, Arijit Biswas, Sambarta Dasgupta, and Ajith Abraham. "Bacterial foraging optimization algorithm: theoretical foundations, analysis, and applications." In *Foundations of computational intelligence volume 3*, pp. 23-55. Springer, Berlin, Heidelberg, 2009.

[3] JOUR Giga, YoshikazuChen, Hanning Zhu, Yunlong Hu, Kunyuan 20112011/03/31 Adaptive Bacterial Foraging Optimization,108269, 20111085-3375, https://doi.org/10.1155/2011/10826910.1155/2011/108269

[4] Ze Li, Yong Qian, Hui Wang, Xiaoli Zhou, Gehao Sheng, Xiuchen Jiang, Partial discharge fault diagnosis based on Zernike moment and improved bacterial foraging optimization algorithm, Electric Power Systems Research, Volume 207,2022,107854, ISSN 0378-7796, https://doi.org/10.1016/j.epsr.2022.107854

[5] Zhiqiang Wang, Jinzhu Peng, Shuai Ding. A Bio-inspired trajectory planning method for robotic manipulators based on improved bacteria foraging optimization algorithm and tau theory[J]. *Mathematical Biosciences and Engineering*, 2022, 19(1): 643-662. https://doi.org/10.3934/mbe.2022029

[6] S. Akkara and J. T, "PI Controller Based Switching Reluctance Motor Drives using Smart Bacterial Foraging Algorithm", *EAI Endorsed Trans AI Robotics*, vol. 1, pp. 1–8, Jan. 2022.

[7] S. Devi, M. Geethanjali, Application of Modified Bacterial Foraging Optimization algorithm for optimal placement and sizing of Distributed Generation, Expert Systems with Applications, Volume 41, Issue 6,2014, Pages 2772-2781, ISSN 0957-4174, https://doi.org/10.1016/j.eswa.2013.10.010.

[8] Ehsan Daryabeigi, Behzad Mirzaeian Dehkordi, Smart bacterial foraging algorithm-based controller for speed control of switched reluctance motor drives, International Journal of Electrical Power & Energy Systems, Volume 62,2014, Pages 364-373, ISSN 0142-0615, https://doi.org/10.1016/j.ijepes.2014.04.055
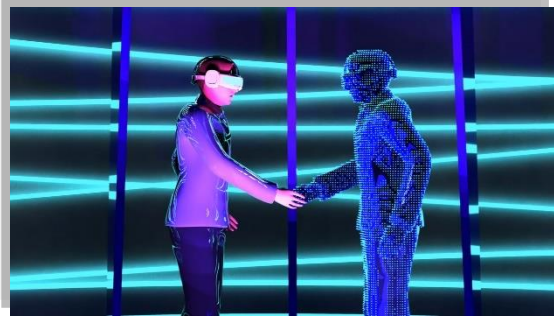
Technology Review

Metaverse – The Beginning of a New World

K. Sneha Latha, (20JG1A0545)
M. Gautami, (20JG1A0561)
Department of CSE

"Metaverse is a set of virtual spaces where you can create and explore with other people who aren't in the same physical space as you."

- Facebook

1. INTRODUCTION

Have you ever dreamt of having superpowers? Imagine having the power to teleport wherever you like, whenever you want. You would be able to take a world tour, attend shows of your favorite artists, and hang out with friends and family at your convenience. This is where technology and the concept of the Metaverse step in.

2. EVOLUTION

The metaverse is a digital reality that combines aspects of social media, online gaming, augmented reality (AR), virtual reality (VR), and cryptocurrencies to allow users to interact virtually. Augmented reality overlays visual elements, sound, and other sensory input onto real-world settings to enhance the user experience. In contrast, virtual reality is entirely virtual and enhances fictional realities.

It is a term derived from the 1992 cyberpunk novel "Snow Crash," which implied a world in which people could interact with each other by using their avatars. The metaverse you are hearing about today is also similar to the same concept in many ways.

As the metaverse grows, it will create online spaces where user interactions are more multidimensional than current technology supports. Instead of just viewing digital content, users in the metaverse will be able to immerse themselves in a space where the digital and physical worlds converge.

In 2000, Gartner describes a fusion of a digital world with the physical world, called the Supranet. This relates to metaverse history in the sense that it once again envisioned a rich virtual world, and how it will interact with the physical world.

Gartner expects that by 2026, 25% of people will spend at least one hour a day in the metaverse for work, shopping, education, social media, and/or entertainment.

Essentially you put on a pair of glasses and are instantly transported into another world.

Facebook CEO Mark Zuckerberg believes augmented reality glasses will eventually be as widespread as smartphones. In October 2021, Facebook also announced plans to create 10,000 new high-skilled jobs in the European Union (EU) to help shape the metaverse.

A metaverse represents a combinatorial innovation, as it requires multiple technologies and trends to function. Contributing tech capabilities include augmented reality (AR), flexible work styles, head-mounted displays

(HMDs), an AR cloud, the Internet of Things (IoT), 5G, artificial intelligence (AI), and spatial technologies.

In the industry, the metaverse is surging and breaking down technological limitations.

Low latency and the necessity to show millions of polygons in 3D landscapes have long limited the metaverse's applications; however, recent advances in augmented reality and virtual reality (AR/VR) have expanded the range of possibilities in both the private and professional realms.

Immersion in the physical sense is possible with virtual reality headsets and augmented reality glasses. E-commerce, product placement, virtual shopping, virtual events, business meetings in a virtual arena, and other economic opportunities are available.

3. FEATURES

Metaverse features include

1. Ability for users to construct virtual spaces that are open to other users across devices and platforms.

2. Mixed and extended reality.

3. Compatible virtual and real currencies combine to create a unified economy for digital and physical areas.

4. It is a common technical infrastructure.

These characteristics have propelled it to the forefront of the tech world.

4. ELEMENTS OF METAVERSE

The industry considers Metaverse elements to be extremely important.

The following technologies will be present in the Metaverse:

- Cryptocurrency
- Online purchasing
- Workplace automation
- The internet
- Digital People
- Processing of Natural Language
- Infrastructure device autonomy

5. EXPERIENCE IN METAVERSE

"Youtuber spends 100 days inside the Metaverse and freaks out halfway through"
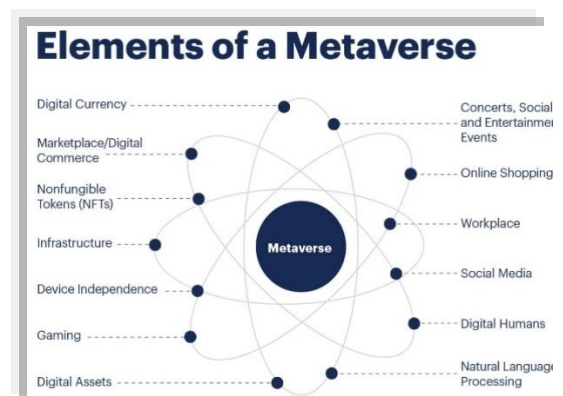

Fig 1: Elements of Metaverse

Ryan Trahan, a content creator from the United States, documented his experience of spending 100 days inside the Metaverse in a video on his YouTube account.

Trahan sequestered himself at home and wore virtual reality glasses the entire time to fully immerse himself in the virtual environment. Even when eating or brushing his teeth, he didn't remove his gear. Alternatively, you could sleep!

Rather than simply playing, the YouTuber decided to make a video description of his voyage, immersing himself in the Metaverse's diverse locations and connecting with people.

Ryan (or "Bryan" in the Metaverse) befriended Klay, an avatar dressed as a stormtrooper who accompanied the YouTuber on part of his voyage in the virtual world, in the early days.

Among other virtual experiences, he played mini-golf, played with ducks, went to the cinema, saw a lunar eclipse, drove a race car, toured the planet Mars, and visited a zoo.

It's also possible to see how businesses are already represented in the Metaverse, such as McDonald's, which Bryan and Klay frequent.
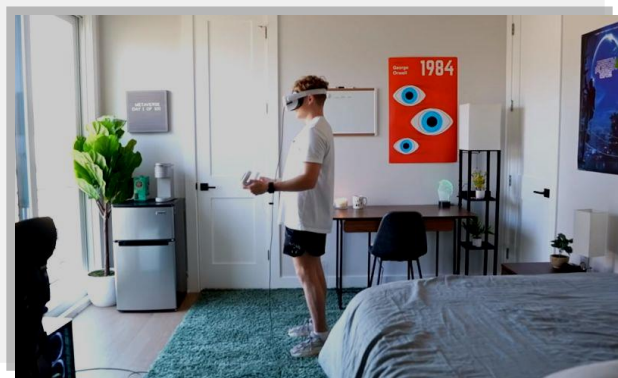
6. CONCLUSION

To sum up, while the metaverse is still in its infancy, many firms are already playing in the digital sphere. Crypto has a huge opportunity in the metaverse. It has the power to adjust how people socialize, watch shows, interact with brands, learn, and trade digital assets. As crypto becomes the metaverse's means of exchange, it is becoming more mainstream in terms of utility and adoption.

NFTs (Non-Fungible Token) are investing in luxury fashion labels such as Louis Vuitton, Gucci, Burberry, Adidas, Nike, and others in the Metaverse. They are ushering in a new era in which digital fashion will be as dynamic as physical fashion. But having access to high-end apparel isn't the only benefit. Walmart is planning to sell NFTs and its cryptocurrency to investors in shortly the near future, emphasizing the significance of convenience.

REFERENCES

[1] https://www.wired.com/story/what-is-the-metaverse/

[2] https://www.polygon.com/22959860/metaverse-explained-video-games

[3] https://www.weforum.org/agenda/2022/02/future-of-the-metaverse-vr-ar-and-brain-computer/

[4] https://www.gartner.com/en/articles/what-is-a-metaverse

Alan Turing

Lagudu Gopika Varshini (20JG1A0554)

Srija Katru(20JG1A0543)

Department of CSE

"On behalf of . . . all those who live freely thanks to Alan's work",   *-- Alan Turing*

Living in Alan Turing's Future

More than a decade has passed since the British government issued an apology to the mathematician Alan Turing. "On behalf of . . . all those who live freely thanks to Alan's work," then Prime Minister Gordon Brown said, in an official statement, "we're sorry, you deserved so much better." The tone of pained contrition was appropriate, given Britain's grotesquely ungracious treatment of Turing, who played a decisive role in cracking the German Enigma cipher, allowing Allied intelligence to predict where U-boats would strike and thus saving tens of thousands of lives.

Alan Turing

British mathematician and logician

Alan Turing, in full Alan Mathison Turing, (born June 23, 1912, London, England—died June 7, 1954, Wilmslow, Cheshire), British mathematician and logician who made major contributions to mathematics, cryptanalysis, logic, philosophy, and mathematical biology and also to the new areas later named computer science, cognitive science, artificial intelligence, and artificial life Unapologetic about his homosexuality, Turing had made a careless admission of an affair with a man, in the course of reporting a robbery at his home in 1952, and was arrested for an "act of gross indecency" (the same charge that had led to a jail sentence for Oscar Wilde in 1895).

Turing was subsequently given a choice to serve prison time or undergo hormone treatment meant to reverse the testosterone levels that made him desire men (so the thinking went at the time). Turing opted for the latter and, two years later, ended his life by taking a bite from an apple laced with cyanide.

His wartime code-breaking work was just one example of what made Turing one of the most influential minds of the twentieth century. In 1936, when he was twenty-three years old, he published a paper called "On Computable Numbers," in which he attempted to tackle the problem of "decidability" in formal systems like mathematics.

In it, he sketched a design for a peculiar machine, somewhere between a gramophone stylus and a typewriter carriage, that moved along a tape divided

into squares. At any given time, the machine might be in one of a finite set of states that would tell it to move either right or left or to print, erase, or stop. The machine was not a piece of functioning hardware but a thought experiment meant to reveal something about the essence of computation. The really novel idea behind Turing's imaginary machine was that it was not designed for a specific purpose but could be given instructions ("programmed") that allowed it to simulate any other machine. Such universal computers are now called Turing machines and are the basis for all smartphones, laptops, and the Internet.

Yet Turing's temperament was the antithesis of the stepwise, uniform procedure captured in his thought experiment. A dreamy nonconformist in the style of hyperrational eccentrics such as Lewis Carroll and Bertrand Russell, Turing operated best on the ludic frequency of games, puzzles, secret codes, and abstract formal systems like mathematics. Wholly a man of science, with nothing but scorn for any whiff of the theological, Turing nevertheless had a speculative streak, which could lead him into realms bordering on science fiction. Since boyhood, he had been keenly interested in mechanism (at eleven, he drew up the plans for a typewriter of his own design) and invented words ("quockling" is the sound seagulls make), and he developed a fondness for Edwin Tenney Brewster's "Natural Wonders Every Child Should Know," which suggested that human beings were just very sophisticated machines.

A mind like Turing's ended up being immensely valuable to Allied counterintelligence during the Second World War. When the German Enigma machine became the most powerful ciphering instrument in the world—it was believed to be impregnable—military cryptography accordingly became more mathematically complex. With the help of notes provided by Polish cryptanalysts and some recovered codebooks from sunken U-boats, Turing oversaw the construction of a machine that could find loopholes in the Enigma's polyalphabetic rotary design, and soon the code-breaking team began cracking Nazi radio messages without the Germans' knowing it. Though Turing had been against the war as a student at Cambridge, he seems to have undertaken this work as much for the challenge of tackling a fiendishly complex puzzle as for any sense of patriotic duty. He was also a stickler for respectable working conditions: he wrote Winston Churchill a letter complaining about the poor plumbing facilities at Bletchley Park, the Tudor mansion northwest of London where the code-breakers had set up shop.

After the war, Turing began writing more speculatively about minds and machines. Anyone who had been reading American science fiction would have been familiar with the questions raised in his paper "Computing Machinery and Intelligence," from 1950, and one of the more delightful intersections in the history of ideas is the way both Turing, in the august philosophy journal *Mind*, and the young Isaac Asimov, in the pulp magazine *Astounding Science Fiction*, started talking about the same thing at about the same time. Turing, in his typically chatty, unadorned way, wondered what could serve as a criterion for treating a machine as "intelligent." To answer that question, he came up with the second of his famous thought experiments, the imitation game (now known as the Turing test), in which a person poses questions via teletype to two interlocutors, one a human, the other an

algorithm. If the questioner cannot tell the difference between them, then we must grant that the machine thinks.

One reason that Turing settled on a talking test for artificial intelligence was that he did not want machines to be judged according to irrelevant criteria. "We do not wish to penalise a machine for its inability to shine in beauty competitions," he wrote, just as we would "not penalise a man for losing a race against an aeroplane." While Asimov was writing stories about government-issue robots with rules burned into their positronic brains to prevent them from rebelling against their masters, Turing's essay directly inspired a new wave of trippier science fiction. Philip K. Dick happened upon a reprint of "Computing Machinery and Intelligence" and, soon afterward, went to work on "Do Androids Dream of Electric Sheep?," a novel that posited a so-called Voight-Kampff empathy test for determining whether someone is a human being or a replicant. (The story was later the seed for the film "Blade Runner.")

In the years leading up to Turing's death, his thoughts ran in increasingly imaginative, unpredictable directions. He used the Fibonacci series to understand patterns like those in sunflower petals and hydra tubules, tinkered with a theory of cellular automata, and pursued the design of machines that would not only pass the Turing test but also learn from experience (the ultimate rebuttal to Lady Lovelace's Objection).

Given that the twenty-first century has become one giant Turing machine, it is not surprising that the culture remains obsessed with him. Had Turing lived longer, perhaps the state of artificial intelligence would encompass more than drearily corporate banalities such as the Amazon checkout window making suggestions about what you might like for your next purchase, Google offering up a few words for how to complete a sentence in progress, or a South Korean genius having his soul crushed by a roomful of statistics wonks—not to mention more chillingly Orwellian developments, such as facial-recognition software. It is fortifying to remember that the very idea of artificial intelligence was conceived by one of the more unquantifiably original minds of the twentieth century. It is hard to imagine a computer being able to do what Alan Turing did.

References:

[1] https://www.newyorker.com/culture/culture-desk/living-in-alan-turings-future

[2] https://www.realclearscience.com/2020/01/20/living_in_alan_turing039s_future_289140.html

Slavery to heights of power

Landa Rashmitha(20JG1A0556)

Department of CSE

According to biblical history there was a man called Jacob. He had twelve sons and one daughter. His sons were Reuben, Simeon, Levi, Judah, Dan, Naphtali, Gad, Asher, Issachar, Zebulun, Joseph and Benjamin. And his daughter was named Dinah.

Joseph- The Beloved Son

Among all the others, Jacob loved Joseph because he was young and very good. Joseph was born in the Mesopotamian town of Haran, to his parents Jacob and Rachel. At the age of six, he left Haran along with his family and journeyed to the land of Canaan, eventually settling in Hebron. Jacob displayed extra affection to Joseph, who was born to his father's old age, presenting him with a specially crafted garment i.e he made him a coat of many colours. This prompted feelings of jealousy within his brothers, especially the sons of Jacob's other wife, Leah. These ill feelings increased when Joseph repeated two of his dreams to them, in which he was portrayed as ruling over his brothers. In the first dream, the brothers were gathering wheat in the field, and the brothers' bundles bowed to Joseph's bundle. In the second dream, Joseph envisioned the sun, the moon, and eleven stars (symbolizing his parents and brothers) bowing to him. By telling these dreams to his father and to his brothers his father rebuked him and said unto him, "what kind of a dream is that? Do you think that I, your mother and your brothers are going to come and bow down to you?" But Jacob his father thought within himself that perhaps God had destined Joseph for great things. Soon enough, when Joseph was seventeen, the tension came to a head.

Sold by His Brothers

One day, when the sons of Jacob had gone, with their flocks to Schechem. Jacob said to Joseph: "I want you to go to Schechem where your brothers are taking care of the flock." He obeyed and went in search of them.

When they brothers saw him at a distance, they said: "Here comes that dreamer. Come on now, let us kill him and throw his body into one of the dry wells. Seizing their chance, the brothers threw the unsuspecting Joseph into a pit. A short while later they spotted an Arab caravan passing the scene, and the brothers sold Joseph to the traders for twenty pieces of silver. By aware of this scene their brothers had killed a goat, dipped Joseph's coat in the blood and sent it to their father,

saying: "We found this. Does it belong to your son?" "Yes, it is his! Some wild animal has killed him. My Son Joseph has been torn to pieces!" And me mourned for his son a long time. Joseph was eventually brought to Egypt, where he was sold to Potiphar, one of King Pharaoh's ministers.

Steadfast Morality

For a while, things started to look up for young Joseph. Divine success enabled him to find favour in his master's eyes, and he was appointed head of Potiphar's estate. However, this would not last for long.

Attracted by his handsome looks, Potiphar's wife desired to be intimate with him. To her consternation, Joseph continuously refused. One day, when no one was home other than the two of them, the mistress grasped Joseph's garment, demanding that he consent. Thinking quickly, Joseph slid out of his cloak and ran outside. This self-control earned him the appellation, **"Joseph the righteous."**

But Potiphar's wife turned the tables on Joseph, telling her husband that it was Joseph who had tried to entice her. The angry master reacted by placing his trustworthy assistant in prison.

Joseph—Interpreter and Viceroy

Joseph's charisma followed him to prison as well, and the warden soon appointed him as his right-hand man. In time, his unique qualities expressed themselves in an additional area: when the king's royal cupbearer and baker were imprisoned, Joseph successfully interpreted their dreams, correctly predicting that the cupbearer would be released and the baker, hanged.

Two years later, King Pharaoh himself envisioned two dreams, which none of his advisors were able to explain. Remembering the Hebrew youth from his prison days, the cupbearer suggested that Joseph be summoned. Joseph, then thirty, interpreted Pharaoh's dreams as being a Divine prediction for seven years of plenty followed by seven years of famine, and advised Pharaoh to prepare by storing grain during the first seven years. Impressed by Joseph's wisdom, Pharaoh appointed him as his viceroy, second only to the king himself, and tasked him with readying the nation for the years of famine

Climactic Reunion

Meanwhile, the effects of the famine were felt in nearby Cannan. Hearing that there was grain in Egypt, Joseph's brothers journeyed there to buy precious food from the viceroy, not realizing that he was their very own brother.

Joseph decided to utilize this opportunity to observe whether his brothers truly regretted having sold him. Using a succession of dramatic maneuvers, Joseph tested his brothers' determination to save their youngest brother Benjamin—Joseph's only maternal brother—from the plot he set up

for him. Once he saw their devotion toward Benjamin, Joseph finally revealed his identity to his astonished siblings.

Following this heartfelt reunion, Jacob and his family settled in the Goshen section of Egypt. This series of events served as the backdrop for Israel's ultimate enslavement in Egypt and the subsequent Exodus.

Joseph's Family

After appointing Joseph as viceroy, Pharaoh gave him as a wife Asenath, daughter of Potiphera, priest of On. Midrashic sources identify Potiphera as none other than Potiphar, Joseph's previous master.

Joseph and Asenath had two sons, Manasseh and Ephraim, both born during the seven years of plenty. Before Jacob's death, he gave Joseph a gift: his children would be the only ones from among Jacob's grandsons to be treated as independent tribes. Indeed, throughout the Jews' journey in the desert, the tribes of Manasseh and Ephraim received equal status to the other tribes, and they inherited individual portions of the Land of Israel.

Passing and Burial

Joseph ruled Egypt for a total of eighty years, until his death at the age of 110. Before his passing, he made his brothers promise to take his coffin along with them when they would eventually leave Egypt for the Promised Land. After his death, he was embalmed and laid to rest in Egypt. Indeed, when the Jews left Egypt many years later, Moses made sure to locate Joseph's tomb and carry his remains to the Land of Israel.

Joseph was subsequently buried in Shechem (known today as Nablus), and his resting place is visited until today.

Moral of the story

The Moral of the story is in this world the good people sometimes suffer unjustly, but that if they remain patient and pray for their enemies, as Joseph did, then their suffering will soon be turned into joy.

Poem

LATHIFUNNISHA
(20JG1A4232)
Department of CSE (AL-ML)

TO HER- FROM HER
Stop gazing at the sky and wishing for wings,
For it happens only in fairy tales.
Life is not a bed of roses
And not everyone is a prince.
So build you might
And shred your plight
For in this fantasy filled World.
Plunge like a harlequin
With the mane of a lion fierce
Dare not let yourself down
Nor let others do
Never be a dancing clown
Nor tend to do so
Grow fearless.
Unwind the strings.
Because that's what you're destined to.
And remember girl of this Age,
Though your wings are cut
You've still got your claws.
Change for yourself;
but not for the world,
cause change is detrimental
But not judgmental.
When will the world appreciate you?
When you disregard your own self.
The world is a showcase baby
People tend to pick up ifs and buts
But they would never dare to do so;
When you have the guts.
Build your own wings
And decide your destination;
the distance and direction
Set an altitude of your choice
Leaving aside many a voice.
For that would be the world
In which you would rejoice.

Do You Know

1. There are more living things on and inside your body than there are people on Earth.

2. Scientists believe that Leonardo Da Vinci could write with one hand and draw pictures with others at the same time.

3. In August 2010, Beijing witnessed the longest traffic jam ever; it lasted for 10 days and was 62 miles long.

4. Sweden is the largest island country in the world. It has over 221,800 islands, only about a thousand of which are inhabited.

5. If you want to watch every video on YouTube you'd have to spend 1,000 years on that. And then 1000 times more because of all the new videos that would appear by then.

Facts:

1. NASA's internet speed is 91 gigabits per second.

2. 350,000 tweets per minute i.e, every second on average around 6000 tweets are tweets are tweeted on twitter leads to 500 million tweets per day and around 200 billion tweets per year.

3. Sophia is the first robot to get citizenship on October 25th,2017, from Saudi Arabia.

4. Only 8% of the world's currency is physical money, the rest only exists on computers.

5. It took less code to send a man into space than to run a smartphone.

Students Captures

B.M. Vyshnavi (21JG5A0503)

K. Sneha Latha (20JG1A0545)

Arji Sai Manasawini(21JG5A0502)

Pallavi Alanka (20JG1A0502)
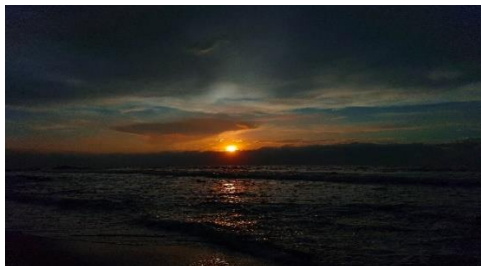

Betha Jyoshnavi (20JG1A0508)

K.J. Sai Nikitha (20JG1A0534)

K. Divya Sri (20JG1A0548)

Srija katru(20JG1A0543)
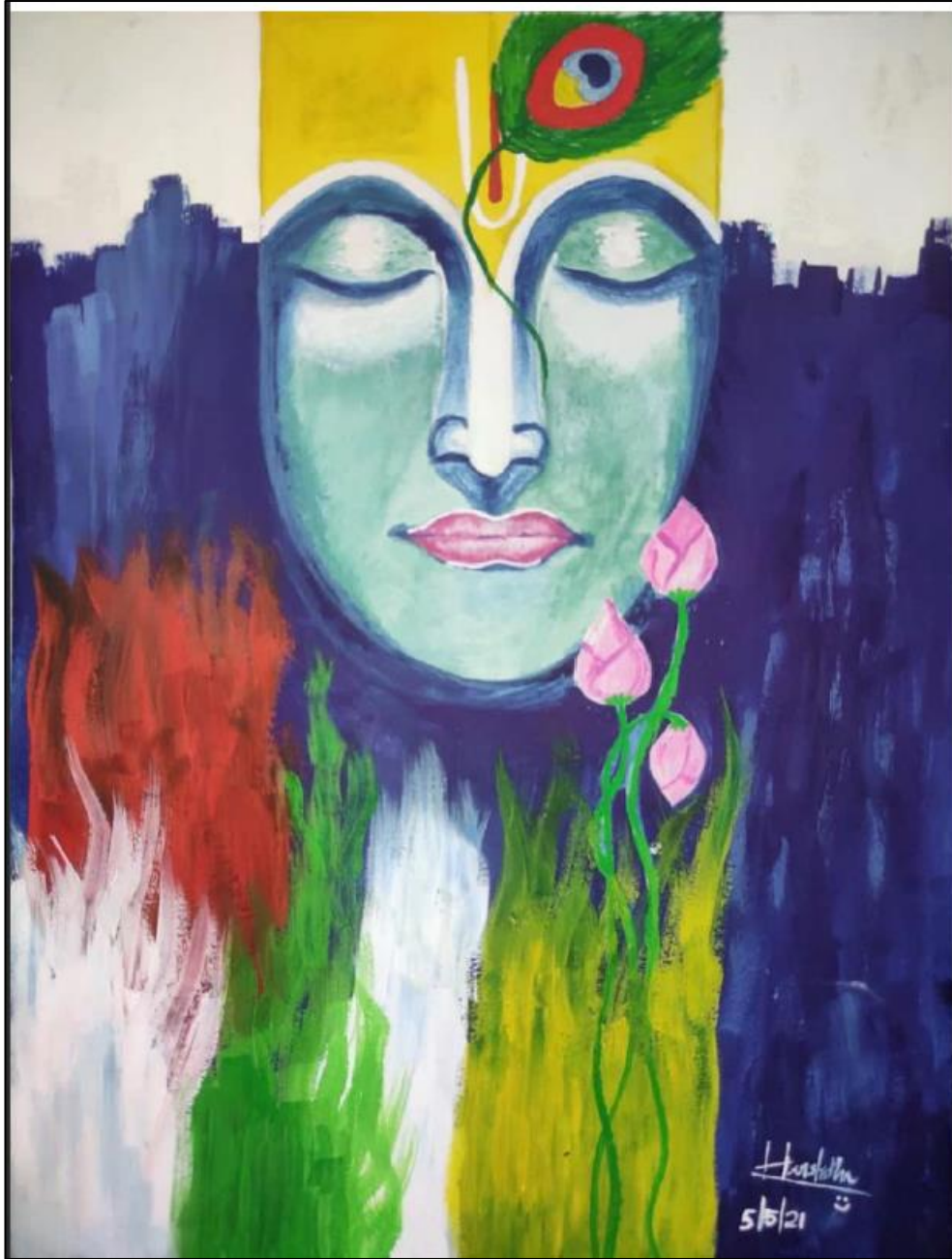

A. Harika (20JG1A0503)

Lagudu Gopika Varshini(20JG1A0554)

Picking Up the Pieces from The Art Studio

Killari Vanajakshi (20JG1A0544)

B. Hema Harshitha (21JG5A0504)

STUDENT CORNER

TOP HACKER RANK HACKOS FROM CSE DEPARTMENT

Hacker Rank is a technology hiring platform that is the standard for assessing developer skills for over 2,800+ companies around the world. By enabling tech recruiters and hiring managers to objectively evaluate talent at every stage of the recruiting process, Hacker Rank helps companies hire skilled developers and innovate faster!

S. No.	Name of the Student	Roll number	HACKOS
1.	Sowmya Yadla	20JG1A05C0	12305
2.	M. Sravani	20JG1A0557	1374
3.	A. Pallavi	20JG1A0502	1216

NPTEL CERTIFICATIONS

NPTEL (National Programme on Technology Enhanced Learning), is a joint venture of the IITs and IISc, funded by the Ministry of Education (MoE) Government of India, and was launched in 2003. Initially started as a project to take quality education to all corners of the country, NPTEL now offers close to 600+ courses for certification every semester in about 22 disciplines. Since 2013, through an online portal, 4-, 8-, or 12-week online courses, are being offered. The enrolment to and learning from these courses involves no cost. An in-person, proctored certification exam (optional) will be conducted at Rs. 1000/- per course and a certificate is provided through the participating institutions and industry.

Total no of NPTEL certificates: **26**

Top NPTEL score achievers for the year:

CONTRIBUTIONS & ACHIEVEMENTS

List Of Department Activities Conducted In The Academic Year: 2021-22

Sl.No	Date	Action Taken	Resource	Class/Section attended
1	17-05-2022	Bug Detection	PICSL Team Members	402
2	17-05-2022	Web/Mobile App Development - Design (Round-2)	PICSL Team Members	9 teams (21 members)
3	16-05-2022	Blind Coding	PICSL Team Members	464
4	16-05-2022	Codathon - Coding Contest (Round-2)	PICSL Team Members	61
5	15-05-2022	Web/Mobile App Development - Ideathon (Round-1)	PICSL Team Members	11 teams (27 members)
6	14-05-2022	Codathon - Quiz (Round-1)	PICSL Team Members	247
7	30-03-2022 - 16-04-22	A Two-Week Workshop on "Android Application Development using Kotlin"	Mr. Pattapagala Satya Venkata Krishna, APSSDC trainer.	2CSE & 2 CSE (AI&ML)
8	26-03-22 - 23-04-22	A Workshop on "Gamification with AR & VR"	Mrs. Hari priya Manne, Game Developer from Bangalore.	CSE and IT
9	17-03-2022	Technical Rapid Fire	COSCENGER Members	2CSE & 2 CSE (AI&ML)
10	10-03-2022	Group Discussion: Online platform, Social media and its effects, Project and Resume Building	COSCENGER Members	2CSE & 2 CSE (AI&ML)
11	26-01-22	Programming Hackathon (Online)-ROUND 2	PICSL Team Members	CSE,CSM
12	12/1/2022	Programming Hackathon (Online)-ROUND 1	PICSL Team Members	CSE,CSM
13	30-12-2021	Hands on Craft Session on Mandala Art, Origami and Paper crafts	Lateefa(20-4232), Amrutha (20-4235), Manaswitha(20-4248), Sravani(20-4250)	II,III CSE
14	9/12/2021	A Coding Contest	CSI Team	III & IV CSE,IT
15	7-12-2021 - 23-12-2021	Workshop on Python Programming	PICSL Team Members	ECE,EEE
16	2/12/2021 - 16-12-2021	2 Day Hands on Workshop on Data Analytics	Y. Sai Anusha(19-5C2)	II ,III CSE & CSE (AI&ML)
17	2/12/2021 - 16-12-2021	2 Day Hands on Workshop on Web Development using Django	19-518, 19-578, 19-574, 19-5C5	II ,III CSE & CSE (AI&ML)

| Sl.No	Date	Action Taken	Resource	Class/Section attended
18	18-11-2021	"Debate on Current Engineering Placements Analysis"	COSCENGER Team (2nd Years) 20-550,566,595,20-4213, 4247	II CSE & CSM(73)
19	11-11-2021	i) Technical Seminar on "Data Visualization Techniques and Intro to Exploratory Data Analytics" ii) Quiz on Aptitude	20-4247- Praseeda Sarepalle, 20-4256- Jayasree Thyadi	II CSE
20	28-10-2021	Technical Seminars by 3CSE students followed by Selection of COSCENGER members from II B.Tech CSE and II B.Tech. CSE (AI&ML) students.	COSCENGER Members	II , III CSE
21	26/10/2021 - 22/12/2021	Training Session on Programming	PICSL Team Members	II CSE,CSM
22	20-10-21 - 24-01-22	A Value Added Course On "Web Development Using Full Stack"	Dr. L. Greeshma, Dept of CSE, GVPCEW.	II CSE
23	18-10-21 - 31-1-22	A Value Added Course On "Web Development Using Full Stack"	Mr. G. Sankhar Rao, Dept of CSE, GVPCEW.	II CSE
24	7/10/2021 - 21-10-2021	Crack The Puzzle	COSCENGER Members	II , III CSE
25	05-10-2021	IEEE Day Celebrations – Offline Mode, a guest lecture on the topic "Engineering Profession from a Career Perspective"	Prof. Dr. Rajkumar Goswami	IEEE Student Members
26	04-10-2021	Quiz on Computational thinking – Offline Mode	IEEE Team	IEEE Student Members
27	04-10-2021	Webinar on "Career Options in the Digital World and Employability"	Mr. Sairam Bollapragada, Director, Global Delivery Center Head, Micro Focus, Bengaluru	CSI Members
28	30-09-21	Technical Quiz (Code IT)	Ms K Aiswarya (19-558),K Sai Sindhura (19-562), VR Vaishnavi (19-5B9) and Y Sai Anusha (19-5C2)	III CSE
29	21-09-21 - 15-11-21	Short Term Training Program on R-programming	Mrs. K. Rohini, Dept of CSE, GVPCEW.	III CSE
30	20-09-21 - 8/12/2021	A Value-Added Course on "Quantitative Aptitude & Reasoning"	Mr S Sumahasajn, Mrs KVS Mounica, Kinjal Goswami, Ms. K Manasa	III CSE

Codathon:

Web/Mobile App Development:

Blind Coding
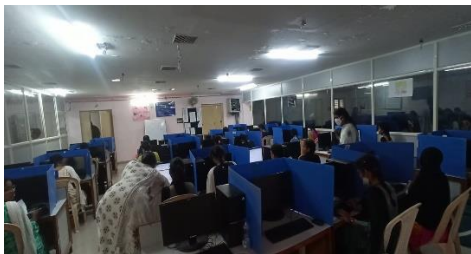
Bug Detection:

Department of CSE has conducted Inauguration Session for COSCENGERS Club and PICSL Club on 18th May 2022

Placements:

For the batch of 2018-2022:

- Highest Package: **27CTC**
- No. of students placed: **76**
- No. of offers received: **141**