



Predictive Modeling for Early Reviewer Engagement: Optimizing Online Product Marketing Strategies

Dr.Vasantha Rudramalla¹|Dr. Bhashyam Krishna Mohan²| B MuraliKrishna³| SaiSrinivas Vellela⁴ | Peravali Surekha⁵ | Dr. Naga MalleswaraRao Purimetla⁶

¹Asst. Professor, Department Of CSE, AcharyaNagarjuna University, Guntur District, AP, India, vassurudramalla@gmail.com

²Assoc. Professor, Dept of IT, RVR and JC College of Engineering, Guntur, AP, India, bkm@rvrc.ac.in

³Asst. Professor, Vignan's Lara Institute Of Technology and Science, Vadlamudi, Guntur District, AP, India, bmkkrishna50@gmail.com

⁴Assoc. Professor, Dept. of CSE-Data Science, Chalapathi Institute of Technology, Guntur-522016, A.P, India, sais1916@gmail.com

³Asst. Professor, Department Of CSE, AcharyaNagarjuna University, Guntur District, AP, India, vassurudramalla@gmail.com

⁵Asst. Professor, Dept .of IT, BAPATLA ENGINEERING COLLEGE, Mahatmajipuram, Bapatla-522102, AP, India surekha.choati@gmail.com

⁶Assoc. Professor, Dept. of CSE, Chalapathi Institute of Technology, Guntur-522016, A.P, India, nmrao85@gmail.com

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ABSTRACT

Online product reviews play a crucial role in aiding users' purchase decisions, with early reviews holding significant sway over subsequent product sales. In this study, we define early reviewers as users who post reviews during the initial phase of a product's lifetime. To quantitatively characterize early reviewers based on their rating behaviors, we propose a novel margin-based embedding model. We conceptualize the review posting process as a multiplayer competition game, where users strive to express their opinions effectively. Leveraging this framework, our margin-based embedding model captures the underlying dynamics of early reviewer behavior, facilitating accurate prediction of early reviewers.

By considering the margin between positive and negative review sentiments, our model effectively captures the subtle nuances of early reviewer behavior. Through extensive experimentation and evaluation, we demonstrate the efficacy of our proposed approach in accurately predicting early reviewers in online product reviews. Overall, our margin-based embedding model offers a promising avenue for understanding and predicting early reviewer behavior, thereby empowering businesses to strategically leverage early reviews for enhanced product marketing and sales strategies.

Keywords: E-Commerce, EarlyReviewers, Early Reviews, Classification of reviews, Sentimental Analysis, Prediction of Early Reviewers

1. INTRODUCTION

The proliferation of e-commerce platforms has revolutionized the way consumers engage with products and services, facilitating the dissemination of user-generated content such as product reviews. These reviews, comprising valuable opinions, comments, and feedback, play a pivotal role in shaping consumers' purchase decisions. Studies indicate that a substantial majority, approximately 71%, of global online shoppers rely on product reviews to inform their purchasing choices. Of particular significance are early reviews, those posted during the initial stages of a product's lifecycle, as they exert a disproportionate influence on subsequent sales performance.

Users who contribute these early reviews, aptly termed early reviewers, wield significant influence despite representing a relatively small fraction of overall reviewers. Their insights can profoundly impact the success or failure of new products and services, making their identification and engagement a strategic imperative for companies. Recognizing the importance of early reviewers, companies have devised various strategies to attract and leverage their feedback. Initiatives such as Amazon's Early Reviewer Program and Amazon Vine aim to incentivize and empower trusted reviewers to share their opinions on new products, aiding fellow consumers in making informed purchase decisions.

Given the critical role of early reviews in shaping consumer perceptions and purchase intentions, marketing practitioners have increasingly focused on strategies to harness their potential. By monitoring and engaging with early reviewers, companies can refine marketing strategies, enhance product designs, and ultimately drive the success of their offerings. In this context, this paper explores the significance of early reviews in the e-commerce landscape, examines strategies for identifying and engaging early reviewers, and highlights the implications of early review programs for consumer decision-making and market dynamics. Through a comprehensive analysis, we aim to elucidate the pivotal role of early reviewers in shaping the modern consumer landscape and inform strategic approaches for businesses seeking to capitalize on this phenomenon.

2. LITERATURE REVIEW

2.1 EXISTING SYSTEMS

Previous studies have highly emphasized the phenomenon that individuals are strongly influenced by the decisions of others, which can be explained by herd behavior. The influence of early reviews on subsequent purchase can be understood as a special case of herding effect. Early reviews contain important product evaluations from previous adopters, which are valuable reference resources for subsequent purchase decisions. As shown in, when consumers use the product evaluations of others to estimate product quality on the Internet, herd behavior occurs in the online shopping process. Different from existing studies on herd behavior, we focus on quantitatively analyzing the overall characteristics of early reviewers

Using large-scale real-world datasets. In addition, we formalize the early reviewer prediction task as a competition problem and propose a novel embedding based ranking approach to this task. To our knowledge, the task of early reviewer prediction itself has received very little attention in the literature. Our contributions are summarized as follows:

We present a first study to characterize early reviewers on an e-commerce website using two real-world large datasets. We quantitatively analyze the characteristics of early reviewers and their impact on product popularity. Our empirical analysis provides support to a series of theoretical conclusions from the sociology and economics. We view review posting process as a multiplayer competition game and develop an embedding-based ranking model for the prediction of early reviewers. Our model can deal with the cold-start problem by incorporating side information of products. Extensive experiments on two real-world large datasets, i.e., Amazon and Yelp have demonstrated the effectiveness of our approach for the prediction of early reviewers.

2.2 PROPOSED SYSTEM

To predict early reviewers, we propose a novel approach by viewing review posting process as a multiplayer competition game. Only the most competitive users can become the early reviewer's w.r.t. to a product. The competition process can be further decomposed into multiple pair wise comparisons between two players. In

a two-player competition, the winner will beat the loser with an earlier timestamp. Inspired by the recent progress in distributed representation learning, we propose to use a margin-based embedding model by first mapping both users and products into the same embedding space, and then determining the order of a pair of users given a product based on their respective distance to the product representation.



Figure 1: Predictive Model Examples

3. RESEARCH METHODOLOGY

3.1 ALGORITHM:

Naive Bayes Algorithm:

In machine learning, naive Bayes classifiers are a family of simple "probabilistic classifiers" based on applying Bayes' theorem with strong (naive) independence assumptions between the features. Naive Bayes has been studied extensively since the 1950s. It was introduced under a different name into the text retrieval community in the early 1960s, and remains a popular (baseline) method for text categorization, the problem of judging documents as belonging to one category or the other (such as spam or legitimate, sports or politics, etc.) with word frequencies as the features. With appropriate pre-processing, it is competitive in this domain with more advanced methods including support vector machines. It also finds application in automatic medical diagnosis.[3] Naive Bayes classifiers are highly scalable, requiring a number of parameters linear in the number of variables (features/predictors) in a learning problem. Maximum-likelihood training can be done by evaluating a closed-form expression, which takes linear time, rather than by expensive iterative approximation as used for many other types of classifiers. In the statistics and computer science literature, naive Bayes models are known under a variety of names, including simple Bayes

and independence Bayes. All these names reference the use of Bayes' theorem in the classifier's decision rule, but naive Bayes is not (necessarily) a Bayesian method.

Algorithm 1 The learning algorithm for user embeddings.

Input training instances $T = \{u p u_0 \mid u, u_0 \in U\}$,
products embeddings set $\{vp\}$,
learning rate λ ,
margin coefficient m ,
embedding dimensions L .

Output user embeddings $\{vu \mid vu \in U\}$ Procedure:

```

1: initialize user embeddings:
2:  $vu \leftarrow \text{unif orm}(-\sqrt{6} L, \sqrt{6} L), \forall u \in U$ 
3:  $vu \leftarrow vu / \|vu\|, \forall u \in U$ :
loop
5: sample a training instance  $hu p u_0 i \in T$  do:
update user embeddings:
7:  $vu := vu - \partial'(T) \partial vu$ ,
8:  $vu_0 := vu_0 - \partial'(T) \partial v u_0$ .
9: until convergence

```

3.2 MATHEMATICAL MODELING:

A Margin-based Embedding Model for Predicting Early Reviewers The essence of this task is to model the partial order between two candidate users' u and u_0 given a product p . Hence, we can cast the total order ranking problem into a pairwise comparison problem. Inspired by the recent progress in distributed representation learning [16], [17], we propose to use an embedding model for this task. We assume that both users and products are mapped into a latent space. In this way, a user u is modeled with a low-dimensional representation vector vu , and a product p is modeled with a low-dimensional dense representation vector vp . In the embedding space, we can reconstruct the partial order relations in the training set and learn the model parameters. Modeling the Pair wise Comparison Based on the embedding representation, we can define the objective function $S(p, u)$ as an inner product between user and product embeddings, i.e.,

$$S(p, u) = v > p \cdot vu.$$

In the embedding space, it is expected that $v > p \cdot vu > v > p \cdot vu_0$ when $u p u_0$. Given the original training set $A = \{hpi ,Lii\}$, we first transform them into a set of partial order pairs $T = \{u p u_0 \mid u, u_0 \in Lp\}$, where Lp is the reviewer list of product p . To learn such embeddings, we

minimize a margin-based ranking criterion over the training set T :

$$\begin{aligned} \mathcal{L}(T) &= \sum_{u \in T} [m + S(p, u_0) - S(p, u)] + \\ &= \sum_{u \in T} [m + v > u_0 \cdot v_p - v > u \cdot v_p] +, \end{aligned}$$

3.3 METHODS AND SPECIFICATIONS: METHODS:

3.3.1 Preprocessing

We first remove reviews from anonymous users, since we would like to associate each review with a unique user. We then remove duplicate reviews often caused by multiple versions of the same product. We also remove inactive users and unpopular products: we only keep the users who have posted at least ten and five reviews, and products which have received at least ten and five reviews in Amazon and Yelp datasets respectively. For review text, we remove stop words and very infrequent words.

3.3.2 Review Spammer Detection and Removal

Our focus is to study the early adoption behaviors of genuine Amazon and Yelp users. However, as shown in the number of spam reviews have increasingly grown on e-commerce websites and it was found that about 10% to 15% of reviews echoed earlier reviews and might be posted by review spammers. It is possible that spam reviews are posted to give biased or false opinions on some products so as to influence the consumers' perception of the products by directly or indirectly inflating or damaging the product's reputation. The existence of spam reviews could lead to erroneous conclusions in our study. Therefore, we need to remove review spammers as part of our data cleaning process.

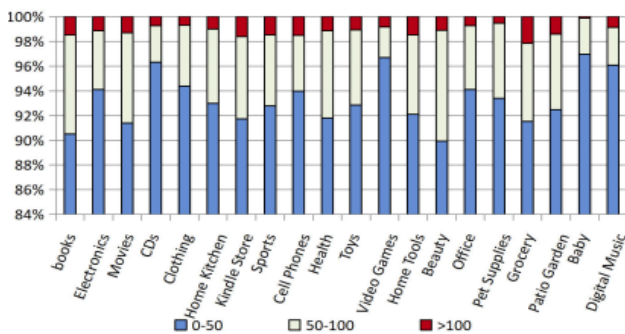


Figure 2: The percentage of Amazon users posting early reviews in different bins by product categories.

4. RESULTS AND DISCUSSION

We present the results on early reviewer prediction. It can be observed that the simplest baseline of ranking users based on the number of reviews posted before (NR) performs the worst. It indicates that users posted a

large number of reviews are not necessarily active in early adoption of products. NER improves over NR, which shows that a user who has acted as an early reviewer for other products before is more likely to adopt new products in the future. PER, outperforms NER in Amazon dataset, while underperforms NER in Yelp dataset. The smoothed PER, i.e., SPER, performs better than PER. The two comparison based baselines B-T and B-C outperform the statistics-based methods only in some cases, and do not yield significant improvement.

Datasets	Amazon					Yelp				
	OR@5	OR@10	Hit@5	Hit@10	RCCP	OR@5	OR@10	Hit@5	Hit@10	RCCP
NR	0.0910	0.1416	0.1105	0.2088	50.15%	0.0704	0.1187	0.0605	0.1110	55.26%
NER	0.1018	0.1516	0.1260	0.2131	61.17%	0.0810	0.0982	0.1134	0.2052	60.53%
PER	0.1114	0.1577	0.1334	0.2218	64.96%	0.0738	0.0896	0.0971	0.1794	56.21%
SPER	0.1125	0.1614	0.1353	0.2261	65.31%	0.0763	0.1025	0.1060	0.2149	57.27%
B-T	0.0931	0.1437	0.1120	0.2050	64.31%	0.0864	0.0939	0.1044	0.1859	59.89%
B-C	0.1132	0.1635	0.1361	0.2390	62.23%	0.0931	0.1016	0.1120	0.1952	59.36%
TS	0.1265	0.1720	0.1450	0.2465	67.54%	0.0904	0.1013	0.1350	0.2300	59.82%
SVMComp	0.1283	0.1747	0.1483	0.2503	67.97%	0.0955	0.1045	0.1341	0.2201	60.13%
MERM	0.1524*	0.2273*	0.1665*	0.2823*	69.25%*	0.1212*	0.1333*	0.1462*	0.2360*	68.57%*

Table 1: Performance comparison on the results of early reviewer prediction.

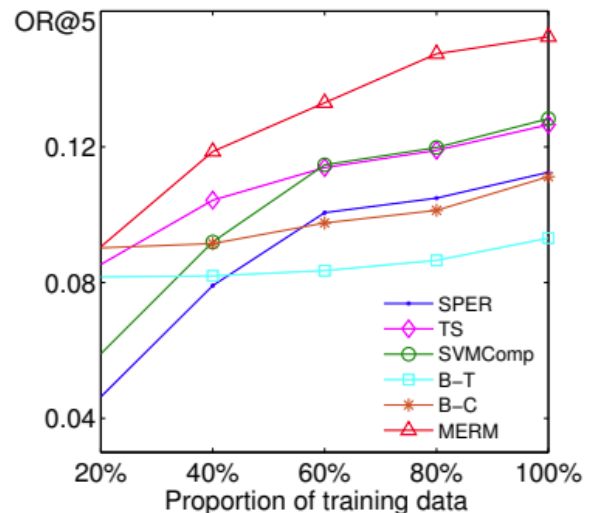


Figure 3: Varying the size of training data.

These results are consistent with the finding previously reported in that a simple ratio based method works well when the training data is sufficiently large. Overall, B-C performs better than B-T. Instead of using a single value, B-C adopts a vectorized representation for modeling the player strength. Furthermore, the two competition based methods TS and SVM Comp improve upon all the above baselines. Although SVM Comp is slightly better than TS, there is no significant difference between them. TS is a classic competition model for characterizing the player strength, while SVM Comp has been shown to be effective in QA expert finding task. These two methods perform best among our baselines.

5. CONCLUSION

In this paper, we have studied the novel task of early reviewer characterization and prediction on two real-world online review datasets. Our empirical analysis strengthens a series of theoretical conclusions from sociology and economics. We found that (1) an early reviewer tends to assign a higher average rating score; and (2) an early reviewer tends to post more helpful reviews. Our experiments also indicate that early reviewers' ratings and their received helpfulness scores are likely to influence product popularity at a later stage. We have adopted a competition-based viewpoint to model the review posting process, and developed a margin based embedding ranking model (MERM) for predicting early reviewers in a cold-start setting.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

REFERENCES

- [1] Kommineni, K. K. ., & Prasad, A. . (2023). A Review on Privacy and Security Improvement Mechanisms in MANETs. *International Journal of Intelligent Systems and Applications in Engineering*, 12(2), 90–99. Retrieved from <https://ijisae.org/index.php/IJISAE/article/view/4224>
- [2] Vellela, S.S., Balamanigandan, R. Optimized clustering routing framework to maintain the optimal energy status in the wsn mobile cloud environment. *Multimed Tools Appl* (2023). <https://doi.org/10.1007/s11042-023-15926-5>
- [3] Vellela, S. S., Reddy, B. V., Chaitanya, K. K., & Rao, M. V. (2023, January). An Integrated Approach to Improve E-Healthcare System using Dynamic Cloud Computing Platform. In 2023 5th International Conference on Smart Systems and Inventive Technology (ICSSIT) (pp. 776-782). IEEE.
- [4] K. N. Rao, B. R. Gandhi, M. V. Rao, S. Javvadi, S. S. Vellela and S. Khader Basha, "Prediction and Classification of Alzheimer's Disease using Machine Learning Techniques in 3D MR Images," 2023 International Conference on Sustainable Computing and Smart Systems (ICSCSS), Coimbatore, India, 2023, pp. 85-90, doi: 10.1109/ICSCSS57650.2023.10169550.
- [5] VenkateswaraRao, M., Vellela, S., Reddy, V., Vullam, N., Sk, K. B., & Roja, D. (2023, March). Credit Investigation and Comprehensive Risk Management System based Big Data Analytics in Commercial Banking. In 2023 9th International Conference on Advanced Computing and Communication Systems (ICACCS) (Vol. 1, pp. 2387-2391). IEEE [6]
- [6] S Phani Praveen, RajeswariNakka, AnuradhaChokka, VenkataNagarajuThatha, SaiSrinivasVellela and UddagiriSirisha, "A Novel Classification Approach for Grape Leaf Disease Detection Based on Different Attention Deep Learning Techniques" *International Journal of Advanced Computer Science and Applications(IJACSA)*, 14(6), 2023. <http://dx.doi.org/10.14569/IJACSA.2023.01406128>
- [7] Vellela, S. S., & Balamanigandan, R. (2022, December). Design of Hybrid Authentication Protocol for High Secure Applications in Cloud Environments. In 2022 International Conference on Automation, Computing and Renewable Systems (ICACRS) (pp. 408-414). IEEE.
- [8] Vullam, N., Vellela, S. S., Reddy, V., Rao, M. V., SK, K. B., & Roja, D. (2023, May). Multi-Agent Personalized Recommendation System in E-Commerce based on User. In 2023 2nd International Conference on Applied Artificial Intelligence and Computing (ICAAIC) (pp. 1194-1199). IEEE.
- [9] Vellela, S. S., Balamanigandan, R., & Praveen, S. P. (2022). Strategic Survey on Security and Privacy Methods of Cloud Computing Environment. *Journal of Next Generation Technology* (ISSN: 2583-021X), 2(1).
- [10] Vellela, S. S., & Krishna, A. M. (2020). On Board Artificial Intelligence With Service Aggregation for Edge Computing in Industrial Applications. *Journal of Critical Reviews*, 7(07), 2020.
- [11] Madhuri, A., Jyothi, V. E., Praveen, S. P., Sindhura, S., Srinivas, V. S., & Kumar, D. L. S. (2022). A New Multi-Level Semi-Supervised Learning Approach for Network Intrusion Detection System Based on the 'GOA'. *Journal of Interconnection Networks*, 2143047.
- [12] Madhuri, A., Praveen, S. P., Kumar, D. L. S., Sindhura, S., & Vellela, S. S. (2021). Challenges and issues of data analytics in emerging scenarios for big data, cloud and image mining. *Annals of the Romanian Society for Cell Biology*, 412-423.
- [13] Praveen, S. P., Sarala, P., Kumar, T. K. M., Manuri, S. G., Srinivas, V. S., & Swapna, D. (2022, November). An Adaptive Load Balancing Technique for Multi SDN Controllers. In 2022 International Conference on Augmented Intelligence and Sustainable Systems (ICAISS) (pp. 1403-1409). IEEE.
- [14] Vellela, S. S., Basha Sk, K., & Yakubreddy, K. (2023). Cloud-hosted concept-hierarchy flex-based infringement checking system. *International Advanced Research Journal in Science, Engineering and Technology*, 10(3).
- [15] Rao, M. V., Vellela, S. S., Sk, K. B., Venkateswara, R. B., & Roja, D. (2023). SYSTEMATIC REVIEW ON SOFTWARE APPLICATION UNDERDISTRIBUTED DENIAL OF SERVICE ATTACKS FOR GROUP WEBSITES. *Dogo Rangsang Research Journal UGC Care Group I Journal*, 13(3), 2347-7180.
- [16] Venkateswara Reddy, B., Vellela, S. S., Sk, K. B., Roja, D., Yakubreddy, K., & Rao, M. V. Conceptual Hierarchies for Efficient Query Results Navigation. *International Journal of All Research Education and Scientific Methods (IJARESM)*, ISSN, 2455-6211.
- [17] Sk, K. B., Roja, D., Priya, S. S., Dalavi, L., Vellela, S. S., & Reddy, V. (2023, March). Coronary Heart Disease Prediction and Classification using Hybrid Machine Learning Algorithms. In 2023 International Conference on Innovative Data Communication Technologies and Application (ICIDCA) (pp. 1-7). IEEE.
- [18] Sk, K. B., & Vellela, S. S. (2019). Diamond Search by Using Block Matching Algorithm. DIAMOND SEARCH BY USING BLOCK MATCHING ALGORITHM. *International Journal of Emerging Technologies and Innovative Research* ([www. jetir. org](http://www.jetir.org)), ISSN, 2349-5162.

- [19] Yakubreddy, K., Vellela, S. S., Sk, K. B., Reddy, V., & Roja, D. (2023). Grape CS-ML Database-Informed Methods for Contemporary Vineyard Management. *International Research Journal of Modernization in Engineering Technology and Science*, 5(03).
- [20] Vellela, Sai Srinivas and Chaganti, Aswini and Gadde, Srimadhuri and Bachina, Padmapriya and Karre, Rohiwalter, A Novel Approach for Detecting Automated Spammers in Twitter (June 24, 2023). *Mukt Shabd Journal* Volume XI, Issue VI, JUNE/2022 ISSN NO : 2347-3150, pp. 49-53 , Available at SSRN: <https://ssrn.com/abstract=4490635>
- [21] Vellela, Sai Srinivas and Pushpalatha, D and Sarathkumar, G and Kavitha, C.H. and Harshithkumar, D, ADVANCED INTELLIGENCE HEALTH INSURANCE COST PREDICTION USING RANDOM FOREST (March 1, 2023). *ZKG International*, Volume VIII Issue I MARCH 2023, Available at SSRN: <https://ssrn.com/abstract=4473700>
- [22] Dalavai, L., Javvadi, S., Sk, K. B., Vellela, S. S., & Vullam, N. (2023). Computerised Image Processing and Pattern Recognition by Using Machine Algorithms.
- [23] Vellela, S. S., Basha Sk, K., & Javvadi, S. (2023). MOBILE RFID APPLICATIONS IN LOCATION BASED SERVICES ZONE. MOBILE RFID APPLICATIONS IN LOCATION BASED SERVICES ZONE", *International Journal of Emerging Technologies and Innovative Research* (www.jetir.org | UGC and issn Approved), ISSN, 2349-5162.
- [24] Vellela, Sai Srinivas and Sk, Khader Basha and B, Venkateswara Reddy, Cryonics on the Way to Raising the Dead Using Nanotechnology (June 18, 2023). *INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)*, Vol. 03, Issue 06, June 2023, pp : 253-257,
- [25] Vellela, Sai Srinivas and D, Roja and B, Venkateswara Reddy and Sk, Khader Basha and Rao, Dr M Venkateswara, A New Computer-Based Brain Fingerprinting Technology (June 18, 2023). *International Journal Of Progressive Research In Engineering Management And Science*, Vol. 03, Issue 06, June 2023, pp : 247-252 e-ISSN : 2583-1062.,
- [26] Gajjala, Buchibabu and Mutyala, Venubabu and Vellela, Sai Srinivas and Pratap, V. Krishna, Efficient Key Generation for Multicast Groups Based on Secret Sharing (June 22, 2011). *International Journal of Engineering Research and Applications*, Vol. 1, Issue 4, pp.1702-1707, ISSN: 2248-9622
- [27] Kiran Kumar Kommineni, Ratna Babu Pilli, K. Tejaswi, P. Venkata Siva, Attention-based Bayesian inferential imagery captioning maker, *Materials Today: Proceedings*, 2023, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2023.05.231>.
- [28] Venkateswara Reddy, B., & Khader Basha Sk, R. D. Qos-Aware Video Streaming Based Admission Control And Scheduling For Video Transcoding In Cloud Computing. In *International Conference on Automation, Computing and Renewable Systems (ICACRS 2022)*.
- [29] Reddy, N. V. R. S., Chitteti, C., Yesupadam, S., Desanamukula, V. S., Vellela, S. S., & Bommagani, N. J. (2023). Enhanced speckle noise reduction in breast cancer ultrasound imagery using a hybrid deep learning model. *Ingénierie des Systèmes d'Information*, Vol. 28, No. 4.
- [30] Vellela, S. S., & Balamanigandan, R. (2023). An intelligent sleep-awake energy management system for wireless sensor network. *Peer-to-Peer Networking and Applications*, 16(6), 2714-2731.
- [31] Rao, D. M. V., Vellela, S. S., Sk, K. B., & Dalavai, L. (2023). Stematic Review on Software Application Under-distributed Denial of Service Attacks for Group Website. *DogoRangsang Research Journal, UGC Care Group I Journal*, 13.
- [32] Priya, S. S., Vellela, S. S., Reddy, V., Javvadi, S., Sk, K. B., & Roja, D. (2023, June). Design And Implementation of An Integrated IOT Blockchain Framework for Drone Communication. In *2023 3rd International Conference on Intelligent Technologies (CONIT)* (pp. 1-5). IEEE.
- [33] Vullam, N., Yakubreddy, K., Vellela, S. S., Sk, K. B., Reddy, V., & Priya, S. S. (2023, June). Prediction And Analysis Using A Hybrid Model For Stock Market. In *2023 3rd International Conference on Intelligent Technologies (CONIT)* (pp. 1-5). IEEE.
- [34] K. K. Kumar, S. G. B. Kumar, S. G. R. Rao and S. S. J. Sydulu, "Safe and high secured ranked keyword searchover an outsourced cloud data," 2017 International Conference on Inventive Computing and Informatics (ICICI), Coimbatore, India, 2017, pp. 20-25, doi: 10.1109/ICICI.2017.8365348.
- [35] Sk, K. B., Vellela, S. S., Yakubreddy, K., & Rao, M. V. (2023). Novel and Secure Protocol for Trusted Wireless Ad-hoc Network Creation. *Khader Basha Sk, Venkateswara Reddy B, Sai Srinivas Vellela, Kancharakunt Yakub Reddy, M Venkateswara Rao, Novel and Secure Protocol for Trusted Wireless Ad-hoc Network Creation*, 10(3).
- [36] Vellela, S. S., Sk, K. B., Dalavai, L., Javvadi, S., & Rao, D. M. V. (2023). Introducing the Nano Cars Into the Robotics for the Realistic Movements. *International Journal of Progressive Research in Engineering Management and Science (IJPREMS)* Vol, 3, 235-240.
- [37] Kumar, K. & Babu, B. & Rekha, Y.. (2015). Leverage your data efficiently: Following new trends of information and data security. *International Journal of Applied Engineering Research*. 10. 33415-33418.
- [38] Vellela, S. S., Reddy, V. L., Roja, D., Rao, G. R., Sk, K. B., & Kumar, K. K. (2023, August). A Cloud-Based Smart IoT Platform for Personalized Healthcare Data Gathering and Monitoring System. In *2023 3rd Asian Conference on Innovation in Technology (ASIANCON)* (pp. 1-5). IEEE.
- [39] Davuluri, S., Kilaru, S., Boppana, V., Rao, M. V., Rao, K. N., & Vellela, S. S. (2023, September). A Novel Approach to Human Iris Recognition And Verification Framework Using Machine Learning Algorithm. In *2023 6th International Conference on Contemporary Computing and Informatics (IC3I)* (Vol. 6, pp. 2447-2453). IEEE.
- [40] Vellela, S. S., Vuyyuru, L. R., Malleswara Rao Purimetla, N., Dalavai, L., & Rao, M. V. (2023, September). A Novel Approach to Optimize Prediction Method for Chronic Kidney Disease with the Help of Machine Learning Algorithm. In *2023 6th International Conference on Contemporary Computing and Informatics (IC3I)* (Vol. 6, pp. 1677-1681). IEEE.
- [41] Vellela, S. S., Roja, D., Sowjanya, C., SK, K. B., Dalavai, L., & Kumar, K. K. (2023, September). Multi-Class Skin Diseases Classification with Color and Texture Features Using Convolution Neural Network. In *2023 6th International*

Conference on Contemporary Computing and Informatics (IC3I) (Vol. 6, pp. 1682-1687). IEEE.

- [42] Vellela, S. S., Sk, K. B., & Reddy, V. An Intelligent Decision Support System for retrieval of patient's information.
- [43] Rao, M. V., Sreeraman, Y., Mantena, S. V., Gundu, V., Roja, D., & Vatambeti, R. (2023). Brinjal Crop yield prediction using Shuffled shepherd optimization algorithm based ACNN-OBDLSTM model in Smart Agriculture. Journal of Integrated Science and Technology, 12(1), 710. Retrieved from <https://pubs.thesciencein.org/journal/index.php/jist/article/view/a710>
- [44] Vellela, S. S., Narapasetty, S., Somepalli, M., Merikapudi, V., & Pathuri, S. (2022). Fake News Articles Classifying Using Natural Language Processing to Identify in-article Attribution as a Supervised Learning Estimator. Mukta Shabd Journal, 11.
- [45] V. R. B, K. Basha Sk, R. D, N. Rao Purimetla, S. S. Vellela and K. K. Kumar, "Detection of DDoS Attack in IoT Networks Using Sample elected RNN-ELM," 2023 International Conference on Recent Advances in Science and Engineering Technology (ICRASET), B G NAGARA, India, 2023, pp. 1-7, doi: 10.1109/ICRASET59632.2023.10420193.
- [46] E. S. R. R. Kumar et al., "UAVC: Unmanned Aerial Vehicle Communication Using a Coot Optimization-Based Energy Efficient Routing Protocol," 2023 International Conference on Recent Advances in Science and Engineering Technology (ICRASET), B G NAGARA, India, 2023, pp. 1-5, doi: 10.1109/ICRASET59632.2023.10420027