Section: Research Paper

Business Management System Using Real Time Data Analytics

Sanyam Jain, Sanyog Gupta, Sanjeev Kumar, Shivank Silot, Ms. Sonam Jahan
[sanyam.jain.cs.2019, sanyog.gupta.cs.2019 , sanjeev.kumar.cs.2019 , shivank.silot.cs.2019, sonam.jahan]@miet.ac.in
Department of Computer Science and Engineering
Meerut Institute of Engineering and Technology, Meerut 250005, UP, India

Abstract:
Computers are now vital part of the operations of an organization. There are some applications that come in handy for us in our daily life when computers or related software appear. Project Business Management System aims to develop software-based product information with real time analytics report generator which is an attempt to increase the customer base and the reliability of the customer hence, maximizing the business of the local as well as the global market all over the world by developing this software and applying advanced data analytics tools to compare the sales and providing real time reports of data according to the age group, region and various festivals. Our project is a database application because software is the main tool of the marketing mantra these days. With the advancement in the software technology, people prefer to live a fast paced life and no one is actually interested in maintaining those obsolete manual sales and purchase records. Every year, an overwhelming amount of people around the globe join our existing customer base. So, considering the high revenue growth in the industry and a booming concept of this software, it is considered as a great tech deal. With the help of this software "It has to be time-saving, it has to be convenient and it has to work everywhere", which helps us to maintain customer, goods and billing data with less effort.

Keywords: Python, Transaction, Data Analytics, Database, Tableau

Introduction:

Business Management System is software which helps in managing sales information of billing & stock store. It can easily keep the record of businesses which have done regular business deals. This software is comprehensive and simple as it handles complex tasks easily. It helps an organization in managing the business by handling: Product Information**,** Product Operation (Insert, update, delete), Analysis and Report Generation. The main purpose of the system is to make the stock information easily manageable and effective. Customers and companies' management and transactions are entered and saved on computers and can be accessed in the form of reports and can be updated very easily on computers. It is quite difficult to maintain the record of the billings in the store and reflect it within the database. So, the owner can place order for new billings and replace expired billings [1][2][3].

The key objectives of this software include: To digitalize the manual system, to make the system user-friendly and simple, sales and purchase details, reports should be maintained by user choice [4][5].

Literature Review:

Our present Business Management System is very useful as it is seen that traditional Business Management Systems are not equipped with modern data analytic tools. The previous system did not allow any easy to use operations and it did not provide us with any query handing [6][7]. Tableau framework is a visual analytical platform used in analyzing the data set which was missing in the previous system and hence making our software more data driven [8][9].

Also we have used python programming language, which is a high level general purpose programming language to develop this software.

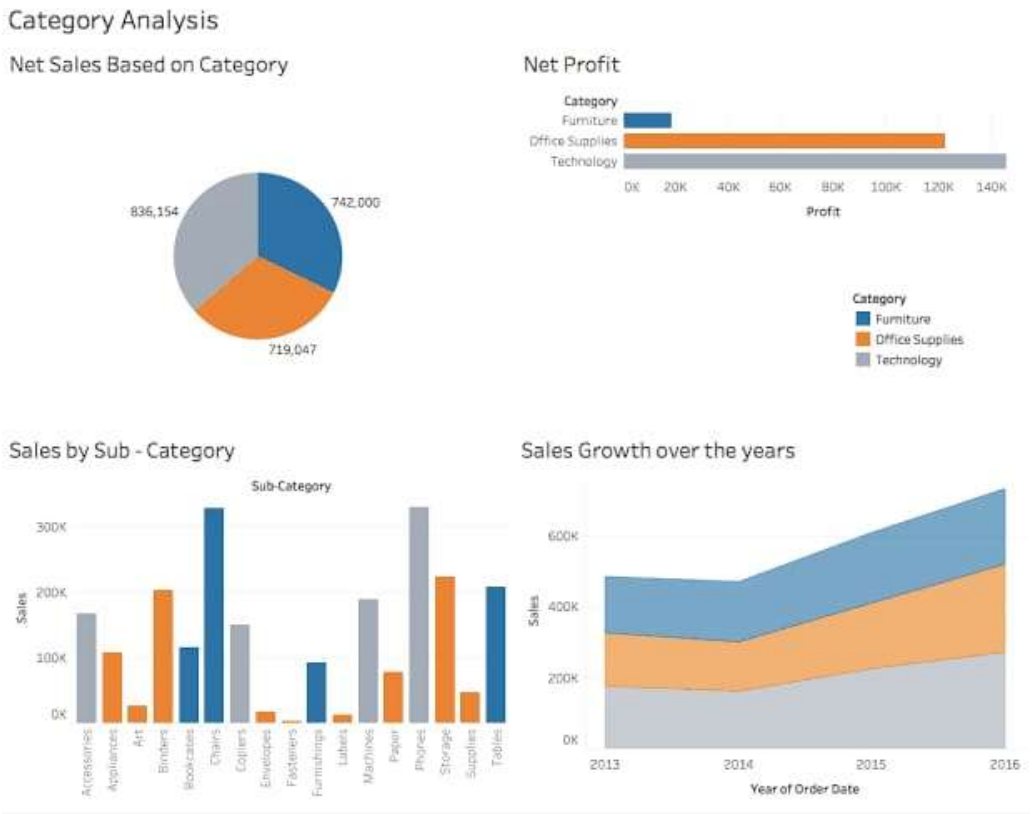


Figure 1 . Showing incompetency in reading graphs

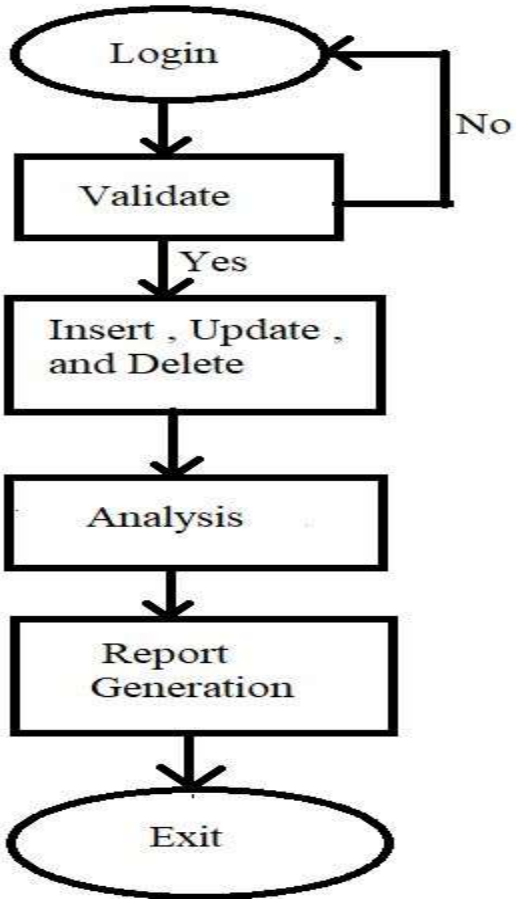


Figure 2. Flowchart of Business Management System

Methodology:

There is a database administrator who enters all the information about a particular company into the system, e.g. name, company number, under the details what the organization buys and sells etc. so that you can store it in the right place and view total amount of change of company. Entering, altering and managing company and product data are some of the activities performed in an organization. Every organization employs a database administrator to perform these tasks. But someone acting as a DBA can never do this task manually. In fact, there is a very large number of operations in an organization and very large fields of information related to a single company. So, if we look at the whole scenario, we will see that this is a very complex and difficult task that can never be done by hand. To solve this problem, we use computers to store data. Computer data is stored using software. This design provides the DBA with all the services needed to manage the database. The software provides a user-friendly environment for the administrator and helps him/her to enter the information correctly and smoothly and then save it to files. Analysis is the key feature of this. We have performed analysis in three different forms i.e. Based on Age Group, Different Regions and Festivals [10][11][12].

We have considered the age group according to different generations (20, 40, 60) and we got to know that interest in different products varies with different ages [15][16][17].
We also got to know different regional practices, climate have shown us different result of purchasing different items [18][19].
We have also seen that people of same region purchases different products during different festivals [20] [21].
In a database management system a user is allowed to access the data and convert the data into information in the SQL server. This management system involves dBase, SQL server, IMS and Paradox. Users are permitted to create, update and delete or extract statistics from the database using these structures. A prepared series of data is termed as a database. Properties of people, things and events are data-related and each field of data is stored in its own fields using the SQL server. Attributes and fields of interest are identified in the business needs and analysis while designing a database. We can define additional fields or change existing fields in accordance with our business needs that can change time to time. Different tables are associated with heterogeneous information [22][23].The database then is combined out of these associated tables. The precise identifier is referred to as the number one key, or virtually the key. A record can be distinguished from all other records in the table using the primary key and it becomes very easy for the user to identify, locate and point to a specific record in the relation. SQL Server makes it very easy to join data across multiple relations [24][25][26]. This makes the server of SQL a well-organized structured format of data items. It allows us to store data into multiple structures and also permit us to define the identifying relationships between tables. The main purpose of a database system is to provide users with an abstract view of the data. This system hides some details about how data is stored and maintained [13][14][27].

```
("""CREATE TABLE stock (
                name text,
                quantity integer,
                cost integer
                ) """)
```

```
self.View.setItem(0, 0, QTableWidgetItem('Stock Name'))
 self.View.setItem(0, 1, QTableWidgetItem('Quantity'))
```

```
self.leftlist.insertItem(3, 'View Transaction History')
```

Figure 3. Sql Queries for inserting data in database

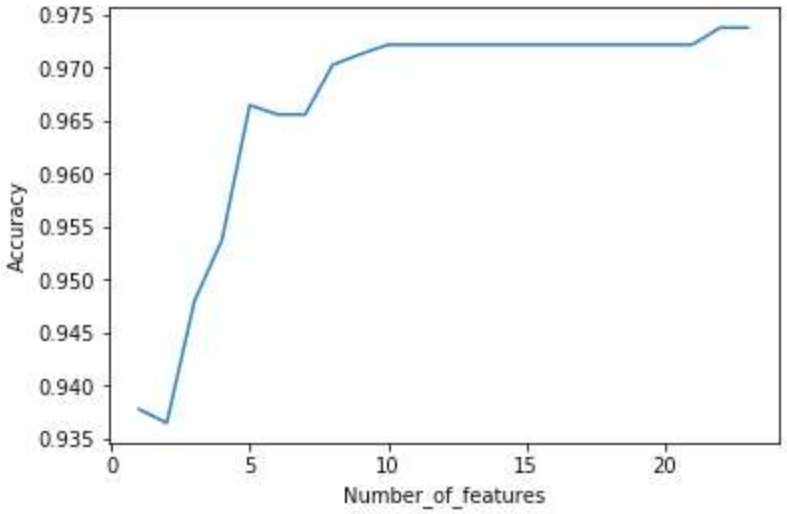


Figure 4. graph curve Number_of_features vs Accuracy

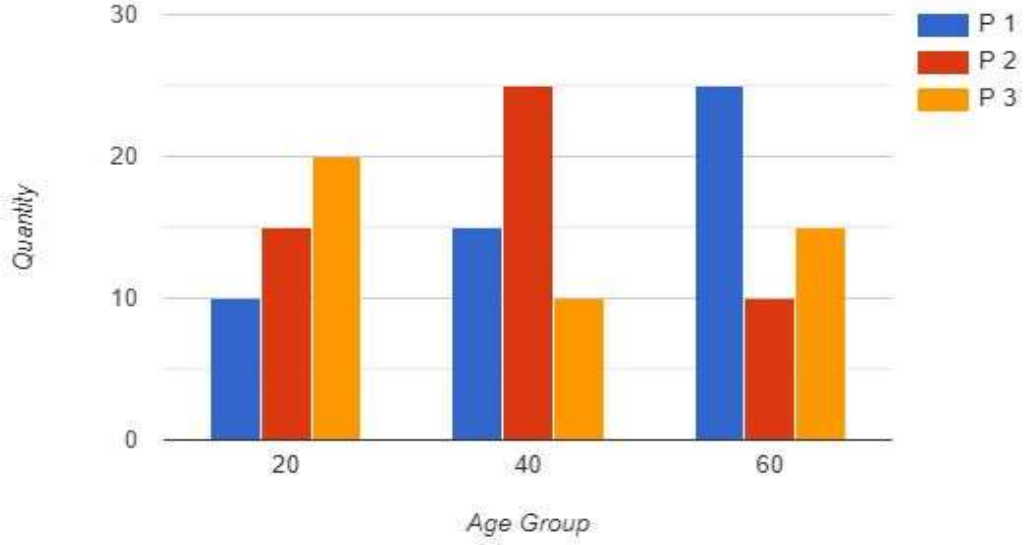


Figure 5. Bar Graph showing Analysis on the basis of different age groups

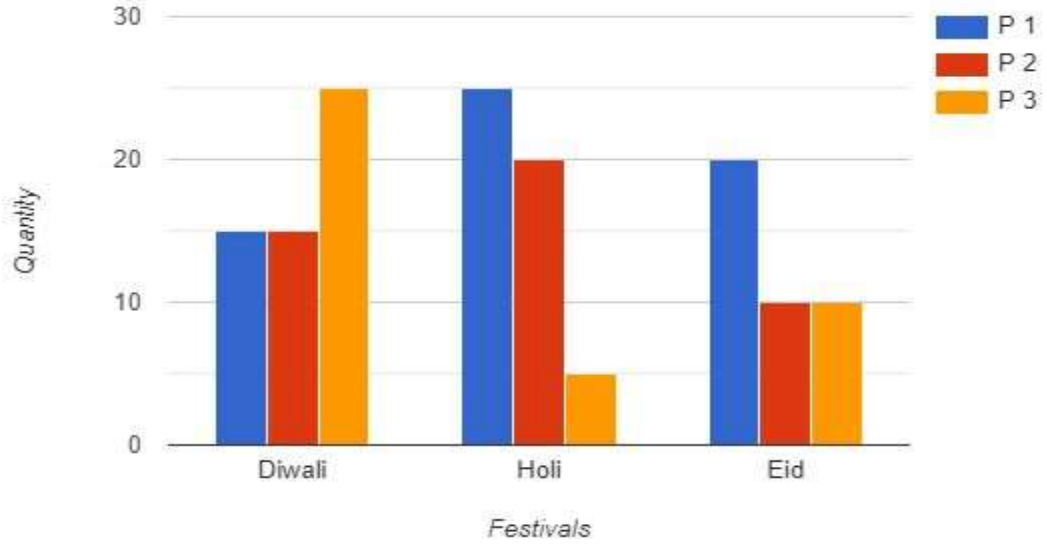
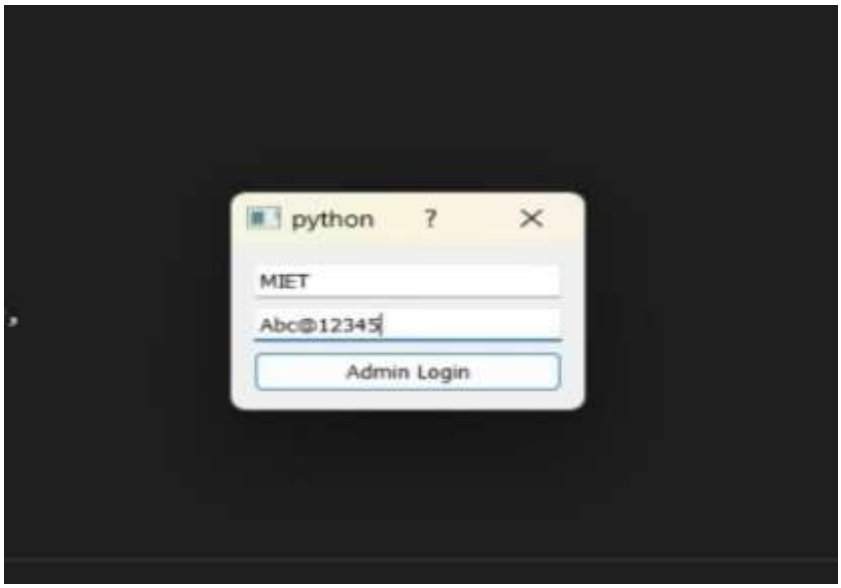


Figure 6. Bar Graph showing Analysis on the basis of different festive seasons



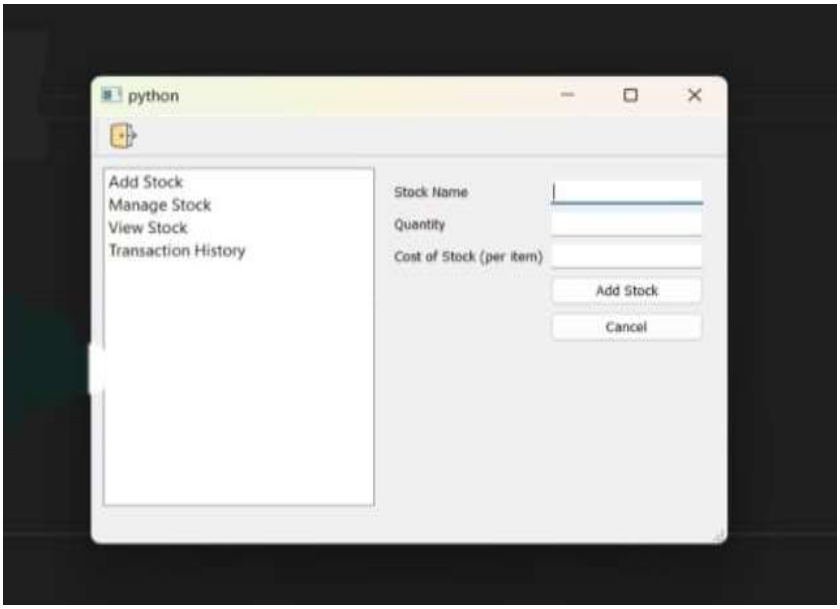


Figure 7. Interface including Login page and different functionalities

	1	2	3	4	5	6
1	Transaction ID	Stock Name	Transaction Type	Date	Time	Transaction Specific
2	1900001	LAYS	INSERT	2023-04-29	21:42	Stock added with Quantity : 10 and Cost(Per Unit in Rs.) : 20
3	1900002	ABH	INSERT	2022-12-24	20:53	Stock added with Quantity : 2 and Cost(Per Unit in Rs.) : 4
4	1900003	APPLE	INSERT	2023-04-28	15:14	Stock added with Quantity : 50 and Cost(Per Unit in Rs.) : 10
5	1900004	STOCK2	INSERT	2021-05-07	17:14	Stock added with Quantity : 100 and Cost(Per Unit in Rs.) : 50
6	1900005	SAMPLE STOCK	INSERT	2021-05-07	17:13	Stock added with Quantity : 100 and Cost(Per Unit in Rs.) : 50

Figure 8. Data being inserted in the database

Conclusion:

Based on the process system we have created, we come to the following conclusion:

This application has been developed taking into account all aspects as well as the needs of the company/organization, the problems they face and the elements that prove to be obstacles in their operations. This software is comprehensive and simple as it handles complex tasks easily. It helps an organization in managing the business by handling: Product Information**,** Product Operation (Insert, update, delete), Analysis and Report Generation. This system makes everything so easy that any query is just a few clicks away. This process system is easier and more reliable to use than the manual system.

The software has an authentication environment which makes the system secure that the manual system never had, which makes the data immune to theft and data breach.

For each data record there are different forms that are required by the company to archive the data. Finally, it can be concluded that all accounting and stock storage requirements are present in this software.

References:

[1] Python for Data Analysis - Data Wrangling with Pandas, NumPy, and IPython (2nd Edition) by Wes McKinney

[2] Anscombe, F. (1973), Graphs in Statistical Analysis, The American Statistician, pp. 195-199.

[3] Anscombe, F. and Tukey, J. W. (1963), The Examination and Analysis of Residuals, Technometrics, pp. 141-160.

[4] Pramanik, Sabyasachi, et al. "A novel approach using steganography and cryptography in business intelligence." Integration Challenges for Analytics, Business Intelligence, and Data Mining. IGI Global, 2021. 192-217.

[5] Narayan, Vipul, et al. "FuzzyNet: Medical Image Classification based on GLCM Texture Feature." 2023 International Conference on Artificial Intelligence and Smart Communication (AISC). IEEE, 2023.

[6] Narayan, Vipul, et al. "Deep Learning Approaches for Human Gait Recognition: A Review." 2023 International Conference on Artificial Intelligence and Smart Communication (AISC). IEEE, 2023.

[7] Mall, Pawan Kumar, et al. "FuzzyNet-Based Modelling Smart Traffic System in Smart Cities Using Deep Learning Models." Handbook of Research on Data-Driven Mathematical Modeling in Smart Cities. IGI Global, 2023. 76-95.

[8] Mall, Pawan Kumar, et al. "Early Warning Signs Of Parkinson's Disease Prediction Using Machine Learning Technique." Journal of Pharmaceutical Negative Results (2022): 4784-4792.

[9] Srivastava, Swapnita, et al. "An Ensemble Learning Approach For Chronic Kidney Disease Classification." Journal of Pharmaceutical Negative Results (2022): 2401-2409.

[10] Sawhney, Rahul, et al. "A comparative assessment of artificial intelligence models used for early prediction and evaluation of chronic kidney disease." Decision Analytics Journal 6 (2023): 100169.

[11] Paricherla, Mutyalaiah, et al. "Towards Development of Machine Learning Framework for Enhancing Security in Internet of Things." Security and Communication Networks 2022 (2022).

[12] Tyagi, Lalit Kumar, et al. "Energy Efficient Routing Protocol Using Next Cluster Head Selection Process In Two-Level Hierarchy For Wireless Sensor Network." Journal of Pharmaceutical Negative Results (2023): 665-676.

[13] Narayan, Vipul, A. K. Daniel, and Pooja Chaturvedi. "E-FEERP: Enhanced Fuzzy based Energy Efficient Routing Protocol for Wireless Sensor Network." Wireless Personal Communications (2023): 1-28.

[14] NARAYAN, VIPUL, A. K. Daniel, and Pooja Chaturvedi. "FGWOA: An Efficient Heuristic for Cluster Head Selection in WSN using Fuzzy based Grey Wolf Optimization Algorithm." (2022).

[15] Faiz, Mohammad, et al. "IMPROVED HOMOMORPHIC ENCRYPTION FOR SECURITY IN CLOUD USING PARTICLE SWARM OPTIMIZATION." Journal of Pharmaceutical Negative Results (2022): 4761-4771.

[16] Babu, S. Z., et al. "Abridgement of Business Data Drilling with the Natural Selection and Recasting Breakthrough: Drill Data With GA." Authors Profile Tarun Danti Dey is doing Bachelor in LAW from Chittagong Independent University, Bangladesh. Her research discipline is business intelligence, LAW, and Computational thinking. She has done 3 (2020).

[17] Narayan, Vipul, et al. "Enhance-Net: An Approach to Boost the Performance of Deep Learning Model Based on Real-Time Medical Images." Journal of Sensors 2023 (2023).

[18] Ojha, Rudra Pratap, et al. "Global stability of dynamic model for worm propagation in wireless sensor network." Proceeding of International Conference on Intelligent Communication, Control and Devices: ICICCD 2016. Springer Singapore, 2017.

[19] Shashank, Awasthi, et al. "Stability analysis of SITR model and non linear dynamics in wireless sensor network." Indian Journal of Science and Technology 9.28 (2016).

[20] Gupta, Sandeep, Arun Pratap Srivastava, and Shashank Awasthi. "Fast and effective searches of personal names in an international environment." Int J Innov Res Eng Manag 1 (2014).

[21] Awasthi, Shashank, Naresh Kumar, and Pramod Kumar Srivastava. "An epidemic model to analyze the dynamics of malware propagation in rechargeable wireless sensor network." Journal of Discrete Mathematical Sciences and Cryptography 24.5 (2021): 1529-1543.

[22] Tyagi, Neha, et al. "Data Science: Concern for Credit Card Scam with Artificial Intelligence." Cyber Security in Intelligent Computing and Communications. Singapore: Springer Singapore, 2022. 115-128.

[23] Srivastava, Arun Pratap, et al. "Fingerprint recognition system using MATLAB." 2019 International conference on automation, computational and technology management (ICACTM). IEEE, 2019.

[24] Kumar, Neeraj, et al. "Parameter aware utility proportional fairness scheduling technique in a communication network." International Journal of Innovative Computing and Applications 12.2-3 (2021): 98-107.

[25] Awasthi, Shashank, et al. "A New Alzheimer's Disease Classification Technique from Brain MRI images." 2020 International Conference on Computation, Automation and Knowledge Management (ICCAKM). IEEE, 2020.

[26] Awasthi, Shashank, et al. "Modified indel treatment for accurate Phylogenetic Tree construction." 2020 International Conference on Computation, Automation and Knowledge Management (ICCAKM). IEEE, 2020.

[27] Mohseni, S., Yang, F., Pentyala, S., Du, M., Liu, Y., Lupfer, N., ... & Ragan, E. (2021, May). Machine learning explanations to prevent overtrust in fake news detection. In Proceedings of the International AAAI Conference on Web and Social Media (Vol. 15, pp. 421-431).