IJMLNCE JOURNAL

International Journal of Machine Learning and Networked Collaborative Engineering

Journal Homepage: http://www.mlnce.net/home/index.html

DOI : https://doi.org/10.30991/IJMLNCE.2020v04i01.004

The Economic Impact of Social Media Fraud in Bangladesh and it's Remedies

[a]Shakik Mahmud[*], [b]Dip Chakraborty, [c]Lamiya Tasnim, [d]NusratJahan Tahira, [e]Mohammad Farhan Ferdous

[a,b,c]*Department of Computer Science and Engineering, United International University, Dhaka, Bangladesh.*

[d]*Department of Computer Science and Engineering, East-West University, Dhaka, Bangladesh.*

[e]*Fukui, Japan.*

[a]smahmud172174@bscse.uiu.ac.bd, https://orcid.org/0000-0001-8589-7766

[b]dipchakraborty71@gmail.com, https://orcid.org/0000-0001-7323-3989

[c]ltasnim172044@bscse.uiu.ac.bd, https://orcid.org/0000-0002-9604-0810

[d]n.tahira12@gmail.com, https://orcid.org/0000-0003-4065-8440

[e]jbratrc2018@gmail.com, https://orcid.org/0000-0001-8076-7428

Abstract

This paper presents the economic impact of social media fraud in Bangladesh and its IT-based prevention model. Online privacy and security problems become a big concern of online day by day. Many types of issues growing up here, for example, phishing, hacking, sabotage, etc. Social media is a popular and powerful tool to express personal life and also business purposes in Bangladesh. Social communicating websites such as Facebook, Twitter, WhatsApp, and LinkedIn are popular social sites. Facebook is the most popular one. By these media, people communicate with their other friends, family and share thoughts, photos, videos, and lots of data, and also, many types of business and commerce have developed on social media. Presently, people just depend on it, so it's marketing value increases day by day well. As well as some Tech fraud groups have been formed and wake up to hack money in some tricky way in this big virtual society. At present, social media is one of the critical areas for fraudsters. We will show in this paper based on our study in two ways, (i) how much money is being spent through it; (ii) IT-based prevention model of this problem.

Keywords

Social media, Online Fraud, Economic Impact, Fraudsters Trap, Spamming, IT-based solution.

1. Introduction

Today, social media has become a part of our daily life [1]. People are now trying to do many things through social media, such as dealing with disasters or medical issues [2] [3]. Since people have been spending on social media for many hours of a day, a business platform has also developed here [4]. At the same time, the cheaters have raised their heads because social media has become an immune place to make money. The fraud quantity on social media is increasing comprehensively.

[*] Corresponding author
Shakik Mahmud
Email: smahmud172174@bscse.uiu.ac.bd

Everyone is connected to social media via the internet; that's impacted the revolution of Information Technology a lot. At present, about 30 million Bangladeshis are associated with this term (according to 2018 social media user report) [5]. Cybercriminals are exploring sensitive and private data by unethical social engineering. In the context of Bangladesh, its prevalence rate is alarming, which affects the central economic situation. There are some specifications of frauds: pressure, scope, honey trap, rationalization. Unconscious People fall trap and lose their money and information. In the current times, it will be a big challenge for I.T. engineers to protect the users of social media from online frauds and spread awareness of spamming activity.

In this study, we have been able to figure out the deceptive money ratio. Moreover, the total number of people who are victims of fraudsters and the number of people losing money in the face of frauds. Data is extracted by conducting surveys in four different sections of Bangladesh. The survey has revealed some new information to the analysis. Most people who lose money on social media are deceived. The cheaters convinced people with some lucrative offers or promising a personal pursuit. We have tried to solve this problem by creating An I.T. base system's model, which can protect people from fake or fraud profiles. And also, that system will try to catch suspicious activities and find frauds quickly. There is a substantial number of studies that have been carried out to examine social media fraud in B.D. and its remedies. The European Union has passed a new guideline that seeks to combat online fraud [07]. And some measures and procedures have been developed to address this threat, like detecting anomalous patterns based on data mining [08]. Spammers manipulate the review of a product and change the sentiment of the buyer [09]. Spammers also try to make rumors for their reasons [18]. So, now is the time to protect our data [19] [20].

2. Related Work

The authors [15] discussed social media, and it's awareness, in this chapter. Mainly they have shed light on opportunities and challenges on social media; also, they review some information about multi-faced implications and few real-world cases. This chapter [15] carried out some exciting analysis with examples on location spoofing and two privacy issues about user to user privacy and user to third party privacy. In the awareness and action section here, authors try to prove in their word that deep learning methods and techniques are worthwhile for detecting fake location information. In our IT-based solution here, we have to try to prioritize authenticity mainly. That's why we didn't use any predicting and tracking system.

This work [09] presents an algorithm that can detect fake reviewers groups in the online marketplace. They propose "DeFrauder," a tool that can detect counterfeit reviewers and their group. Authors applied here the graph base candidate group detection based on "coherence principle," they developed a three-stage algorithm which detects candidate fraud groups, then measures different indicators of the candidate fraud group and finally ranks groups based on their spam score. Here they used four real-world datasets, and it showed satisfactory results. In our work here, we design an I.T. based model (discussed in section 3.1) for social media that can indicate all types of anonymous profiles. That's why users can verify the original profile, and it will help him with decision making.

In [14] this paper, the authors developed a chatbot that can estimate the security level of social media like Facebook, Instagram, youtube, etc. They build a mathematical model, based on this model, the chatbot checks some attributes and estimates the security level. In our work, we proposed an I.T. based model and developed a website that can find original and fake profiles using the database. After the manual verification, the authorized person will upload the profile data on the database. The process is too secure and authentic.

The [21] article is based on online sexual harassment on anonymous social media in Bangladesh. There the authors conduct an online survey and some semi-structured interviews, mainly in Dhaka and Sylhet region. They analyze it with essential statistical tools. For semi-structured interviews, they used a "snowball sampling" method to select the participants. This analysis unveils some information about anonymous social media. Here we tried to find the losing money via social media. For the finding purpose, we randomly selected four cities in Bangladesh and attempted to conduct the survey online and offline(interview). We collected a total of 500 data, and these revealed some new statistics.

According to another study [22], the authors find out some impact of using social networking sites in Bangladesh. It has been well reported some data; these are they found 60% of people face cybercrime using social networking sites. 33.2% affected in cybercrime using social networking sites. Also, 80% of people share their activity on social networking sites like Facebook, google plus, WhatsApp, etc. According to our

collected data, 33% of people on social media were faced with fraud. Also, we found, among 100 people, fraudulent cycles have taken 0.23 million - 0.065 million BDT (in particular).

3. Research Methodology

We collected 500 data from people via online surveys and interviews. In the present study, Bangladesh has an estimated 2019 population of 163.05 million [10], under eight-division [11]. We select four divisions among 8; these are Dhaka, Rangpur, Mymensingh, and Rajshahi, and the selected people ages 14-35. We conducted an online survey of totaling 200 in the Dhaka region. We anonymously selected 200 people from Dhaka and the rest of them via semi-structured interviews, 100 people from Rangpur, 100 people from Mymensingh, and 100 people from Rajshahi. The data were collected through interviews and online using a structured questionnaire from random people. The questionnaire includes some social media fraud scenario and the data on (Is the scenario familiar? transaction event, amount of money exchanged, means of occurrence, and also victims age). The questionnaire language was in Bangla. For the interview, we selected random people who used social media. The interview was conducted in public places like parks, playgrounds, in front of college and university campuses. We told the data providers whether something like the scenario had happened to him or anyone familiar with his surroundings. After collecting the data, we verify them and extract a percentage from them. We use a formula to minimize the probability of matching at least two data between the positive data obtained. Take a look on this formula:

$$Z= (2/p) \times (p/p) \times (1/p)$$

Here Z is the value of probability incidence among the two cases, and 'p' is the percentage which we got from the data. We have to use the value of 'Z' to purify our result. The summary statistics of the variables are reported in section results and discussion section on table 1.

I.T. Based Solution

In Bangladesh, around 33.5 million people use Facebook [12]. Where 72.2% are male and 28.8%, female[12]. And there are many pages and groups on social media like Facebook that are relevant to the business [13]. We developed a model to prevent fraud in the social media name 'checker'. We are trying to generate a unique code for every single account, group, and page. The method is those people who are willing to open an account, page, or group in social media in Bangladesh. First, they have to open an account as usual and apply for verification. After passing this manual verification, the authority will give them a unique code and store their account. On the contrary, the authority will create a website where people can check real and fake accounts, pages, and groups. Following this figure (Figure:1& 2), we explain a method people can avoid fake id and fake business or other risky pages.

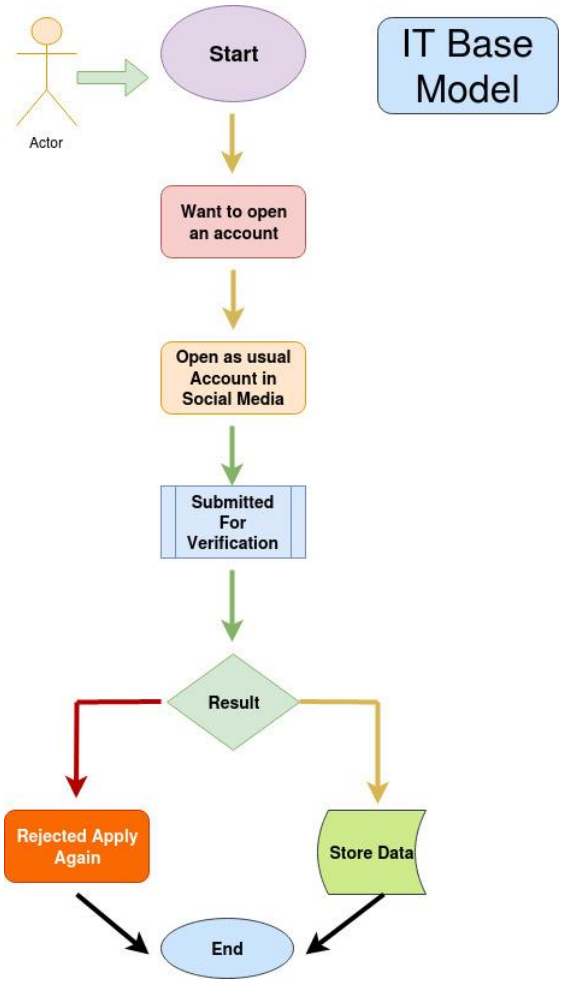

Figure 1: Application Process

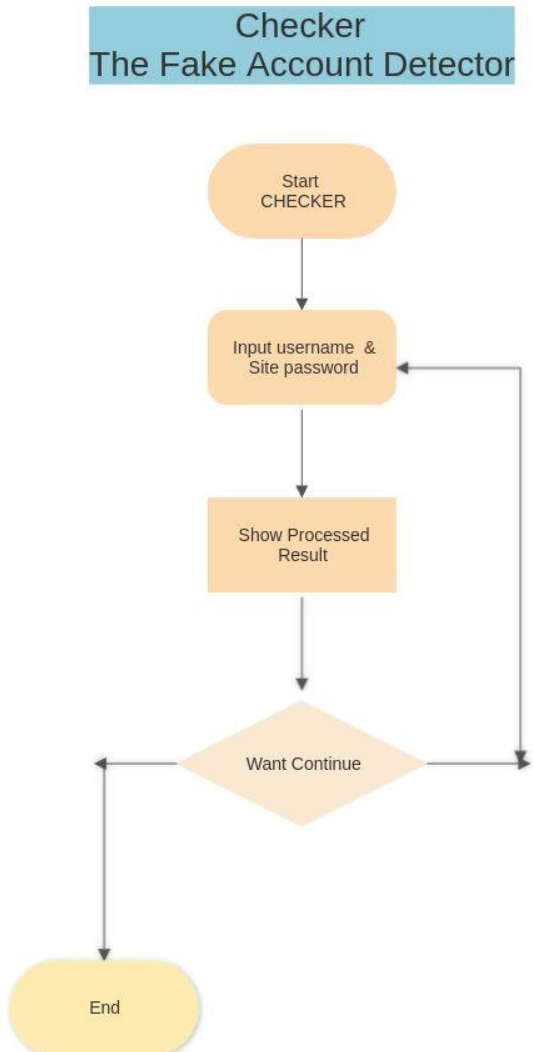

Figure 2: Flow Chart checking an account.

Currently, many web sites have been created to check the data from the database and give the correct answer (example: www.imei.info). It is not expensive at all. Currently, social media is also emphasizing the security of their sites [14]. And the mentioned process is easy-to-use. Here is some picture(Figure 3,4 & 5) of a website that we are designed for checking social media accounts.

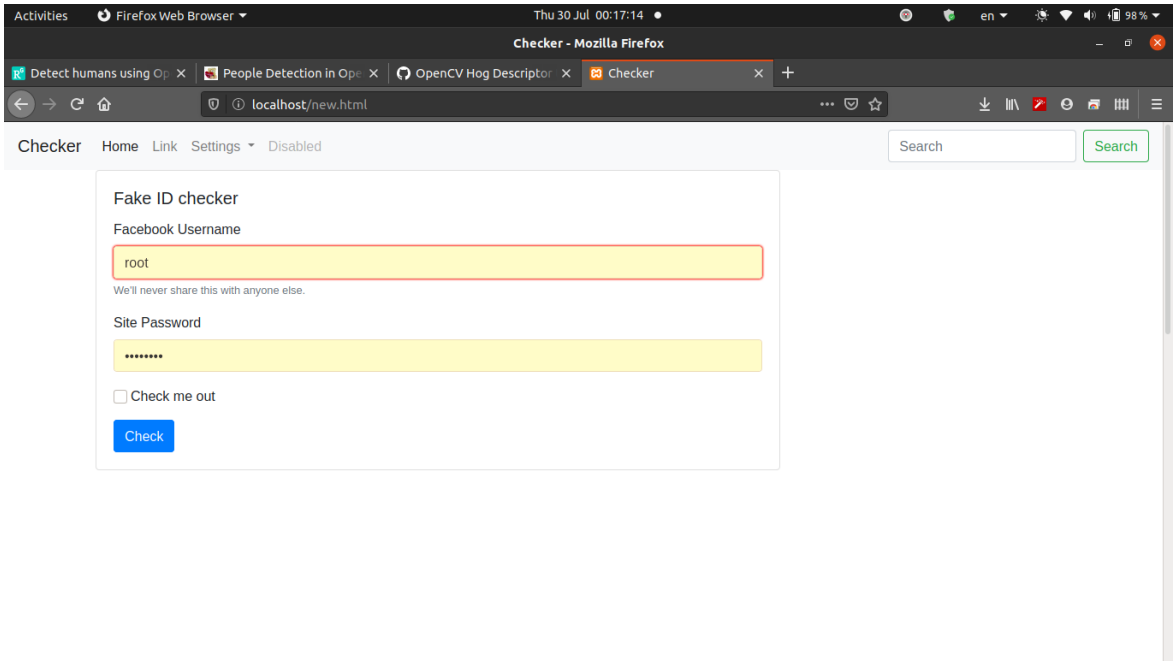

Figure 3: Front page of Checker

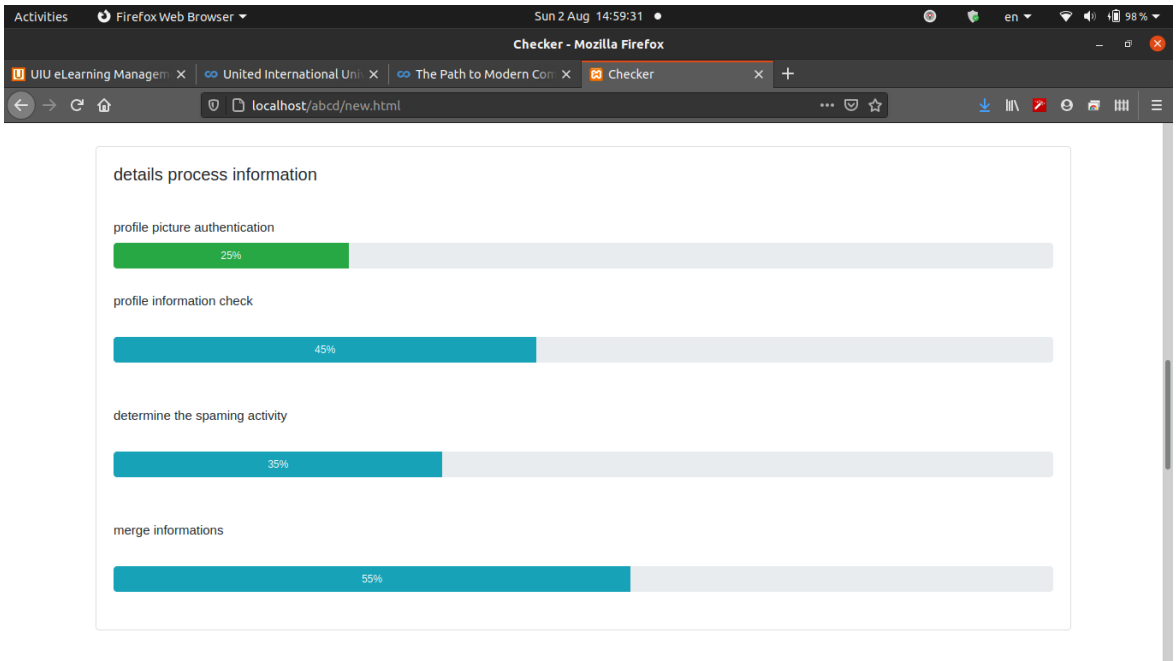

Figure 4: Processing Status

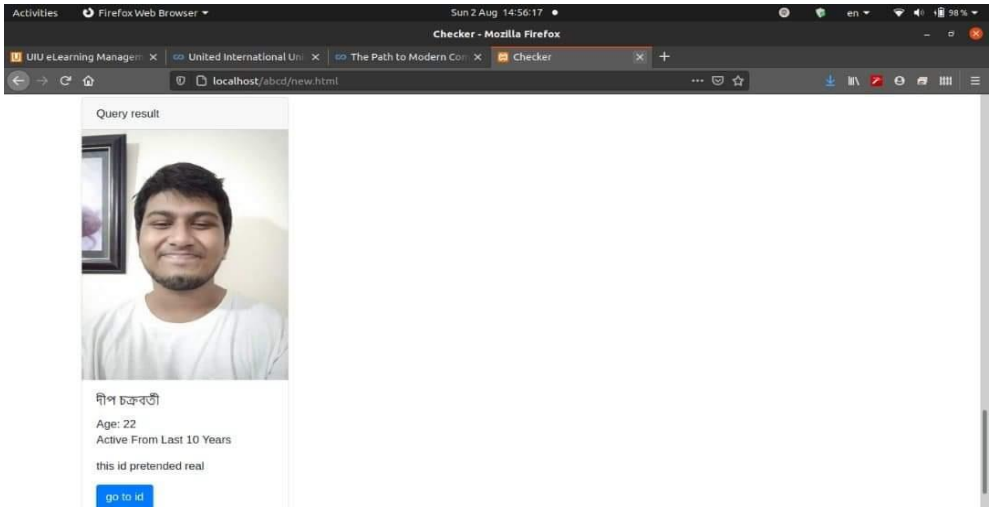

Figure 5: Result

It can be used easily. Just open the website, but the user name of the suspicious profile and site password and press check, then the work will be done automatically. That's it; it's too simple to use.

4. Results and Discussion

After analyzing the data, some new information has come out. The statistics have been represented in tables 1 & 2. The data is frustrating. There is some information we have found on there.

- *Suffering quantity:* About 33% of people suffer from it. This is a huge figure in a large number of users. Among 100 users, around 33 people are suffering from social media fraud. Among the four cities, the victim percentage is almost the same.

- *Losing money*: Around 20% of people lose money on social media fraud. Most of the victims have lost money through fraud. Those who have not lost money have been sharme in another way. Many of them lost their reputation in society.

- *The ridiculous figure of losing money*: The table:1 data revealed some new information. If we look at it a little, we find that out of 100 people; fraudulent cycles have taken 0.23 million - 0.065 million BDT (in particular). Imagine the quantity! So how much can this amount be for 33 million users? (Maybe a little or less) but the amount will be much higher, and it will affect the country's economy. This effect will be even more significant in countries like Bangladesh because the per capita income is too low than in rich countries.

Table 1: Summary statistics:

Region	Amount of Data	The victim of fraud	People who losing money	The amount of losing money.
Dhaka	200	35.29%	19.5%	0.23 Million BDT
Rangpur	100	31.20%	22.43%	0.065 Million BDT
Mymensingh	100	36.50%	18.0%	0.082 Million BDT
Rajshahi	100	31.01%	20.10%	0.072 Million BDT

Table 2: People who faces problem but not lose financially:

Region	Quantity of People(not lose money)
Dhaka	15.79%
Rangpur	8.77%
Mymensingh	18.50%
rajshahi	10.91%

With the opportunity of ignorance of the people, the fraud cycle is robbing money. Public awareness has become necessary for this. Inequality in the number of female and male users is increasing the amount of honey trap. If the solution model can be implemented, then it will be possible to detect the fraud cycle with human protection quickly. The model will be 100% effective if manual verification is pure.

I.T. Based Model "Checker" Performance

'Checker' is a website where people can verify other's profiles on social media. It has two processes; one is website administration and another for users. Users can apply there to demonstrate their social media profiles. After the verification of an authentic profile, the authority will store the profile records on its server. This verification system works manually. For authentication, the authority may check the national user id, birth certificate, passport, etc. If the authority did the process accurately, then the user will find a good result.

5. Limitations

Here we were able to collect only 500 data from 4 cities out of 33.5 million Facebook users in Bangladesh. So, the user's quantities are too large in this country. We just used some necessary statistical tools to find the victim quantities and figure out the loss of wealth. It will be a little different from our data if we will collect data from every user. In this I.T. based solution model, we have demonstrated here how it will work and also build a website to check it. In current situations, lots of hyper technology (A.I., ML, and deep learning) based mobile applications and tools exist in the market. But their accuracy is not reliable. Here we understand how much money is being swindled from the innocent people of Bangladesh. The fraudster also can pressurize the innocent people and sometimes leak their documents. In that case, they lose dignity instead of money. So, this is a sensitive issue, and we can't avoid it. Especially in Bangladesh, a lot of people are not conscious of using social media. That's why we need moral correctness of the solution model. Though the verification process is manual and time-consuming, it will give accurate results. As a beginner, users may feel uncomfortable for its extra process and low-level UI/UX, but it will make sure that they are safe from illegal people, groups, and pages in social media.

6. Conclusion and Future Research

In this article, we have discussed the problem and given its prevention model. Some dishonest and grabby people on social media always try to cheat with innocent users and income a considerable amount of money from them. It spread a lot, and the total number of frauds became a cause of concern for us. Scams become smarter day by day, but no optimal and factual solution exists so far to stop them [6]. We have proposed a model that can handle the problem and can give a possible way, but it has some limitations. We have tried to generate an I.T. solution to solve the problem, a dedicated team that can control the situation by judging the problem of consumers. We made the system safer by constructing a manual verification. In the future, we will try to make it more efficient by using updated technology, where people will be safe and secure on social media.

References

[1]. Vikas. & Pooja. (2019). Social Media to Social Media Analytics: Ethical Challenges. International Journal of Technoethics 10(2):57-70. DOI: 10.4018/IJT.2019070104

[2]. Brent, et.al(2018). The Social Media Index as an Indicator of Quality for Emergency Medicine Blogs: A METRIQ Study. Annals of Emergency Medicine 72(6). DOI:10.1016/j.annemergmed.2018.05.003

[3]. Jakob, et.al(2013). CrisisTracker: Crowdsourced Social Media Curation for Disaster Awareness. Ibm Journal of Research and Development 57(5). DOI: 10.1147/JRD.2013.2260692

[4]. Gil. et.al. (2019). The future of social media in marketing. Journal of the Academy of Marketing Science. DOI: 10.1007/s11747-019-00695-1

[5]. https://thefinancialexpress.com.bd/sci-tech/social-media-users-30-million-in-bangladesh-report-1521797895 (last accessed 1st may 2020)

[6]. [06]. Cross, C. (2019), "Is online fraud just fraud? Examining the efficacy of the digital divide", Journal of Criminological Research, Policy and Practice, Vol. 5 No. 2, pp. 120-131. https://doi.org/10.1108/JCRPP-01-2019-0008

[7]. [07]. Alisdair A. & Samantha.(2019). Tackling online fraud. ERA Forumhttps://link.springer.com/article/10.1007%2Fs12027-019-00580-y

[8]. [08]. Fabrizio.et,al.(2017). An Online Algorithm for Online Fraud Detection. Adaptive Mobile Computing.

DOI:10.1016/B978-0-12-804603-6.00005-X

[9]. Sarthika.et,at(2019). Spotting Collective Behaviour of Online Frauds in Customer Reviews. Twenty-Eighth International Joint Conference on Artificial Intelligence (IJCAI-19)

DOI: 10.24963/ijcai.2019/35

[10]. http://worldpopulationreview.com/countries/bangladesh-population/

(last accessed 1st may 2020)

[11]. http://www.bangladesh.gov.bd/site/view/division-list/%E0%A6%AC%E0%A6%BF%E0%A6%AD%E0%A6%BE%E0%A6%97%E0%A6%B8%E0%A6%AE%E0%A7%82%E0%A6%B9, (last accessed 1st may 2020)

[12]. https://napoleoncat.com/stats/facebook-users-in-bangladesh/2019/09 (last accessed 1st may 2020)

[13]. Wenjing. &Kavita(2019). Predicting Facebook addiction and state anxiety without Facebook by gender, trait anxiety, Facebook intensity, and different Facebook activities. Journal of Behavioral Addictions 8(4):1-9

DOI: 10.1556/2006.8.2019.09

[14]. Ruslan. &Yaroslav.(2019). Improve the Security of Social Media Accounts. 9th International Conference on Advanced Computer Information Technologies (ACIT)

DOI:10.1109/ACITT.2019.8779963

[15]. Xinyue.et.al(2019). Social Media and Social Awareness. Manual of Digital Earth.

DOI:10.1007/978-981-32-9915-3_12

[16]. Tunazzina.et,al(2015). Investigating opportunities and obstacles for a community-oriented time accounting social media in Bangladesh. 7th International Conference on Communities and Technologies (Vol. 12, Iss. 1, pp. 15-23).

[17]. Sajid.(2016). Social Media and Its Role in Marketing.Business and Economics Journal.

[18]. Sooji. & Fabio. (2019). Rumour Detection on Social Media for Crisis Management. The 16th International Conference on Information Systems for Crisis Response and Management

[19]. Albandari.(2018).Privacy Concerns in Social Media.Qatar Foundation Annual Research Conference Proceedings Volume 2018 Issue 4, Mar 2018, Volume 2018, SSAHPD1103

DOI: https://doi.org/10.5339/qfarc.2018.SSAHPD1103

[20]. Norhayati.et,al.(2003). Designing and implementing culturally- sensitive I.T. applications: The interaction of culture values and privacy issues in the Middle East. Information Technology & People, Vol. 16 No. 1, pp. 49-75.

https://doi.org/10.1108/09593840310463023

[21]. FayikaFarhat Nova, MD. RashidujjamanRifat, PratyashaSaha, Syed Ishtiaque Ahmed, and ShionGuha. 2019. Online Sexual Harassment over Anonymous Social Media in Bangladesh. In The International Conference on Information and Communication Technologies and Development. (ICTD '19), January 4–7, 2019, Ahmedabad, India. ACM, New York, NY, USA, 12 pages. https://doi.org/10.1145/3287098.3287107

[22]. Md. Omar Faruq, Alim-Al-Reza, Md. MahbuburRahman, Mohammad RaisulAlam,"Impact of Social Networking Sites in Bangladesh: Few Possible Solutions", International Journal of Intelligent Systems and Applications(IJISA), Vol.9, No.4, pp.53-60, 2017. DOI: 10.5815/ijisa.2017.04.06

Author's Biography

Shakik Mahmud is an undergraduate student of the Computer Science and Engineering department at United International University (UIU), Dhaka, Bangladesh. Recently he worked as a Deputy Technical Director at Japan Bangladesh Robotics and Advanced Technology Research Center (JBRATRC). Mr. Shakik attended several universities in Bangladesh as a robotics and IoT instructor. His research field is Robotics, A.I., Machine Learning, IoT, and IoE.

Dip Chakraborty is an undergraduate student of the Computer Science and Engineering department at United International University (UIU), Dhaka, Bangladesh. He worked as a project coordinator in several projects at UIU Robotics. He conducted some workshops for UIU Robotics &GeeksForGeeks.His research field is Robotics, Social Engineering, Software Engineering, A.I., Machine Learning**.**

LamiyaTasnim is a B.Sc. engineering student department of Computer Science and Engineering at United International University (UIU). She worked as a technical member at Japan Bangladesh Robotics and Advanced Technology Research Center. Her interested field is Robotics, IoT, and A.I.

Nusrat Jahan Tahira is a B.Sc. engineering student department of Computer Science and Engineering at East-West University (EWU). She worked as a technical member at Japan Bangladesh Robotics and Advanced Technology Research Center. Her interested field is Social Engineering, Algorithms, and A.I.

Mohammad FarhanFerdous: He was born in Satkhira, Bangladesh, in 1990. He did his SSC from the new model High School, Dhaka, and Diploma in Mechanical Engineering, Dhaka Polytechnic Institute, Dhaka, Bangladesh, in the years 2004 and 2008, respectively. He completed his B.Sc. in Mechatronics Engineering from the World University of Bangladesh (WUB), Dhaka, Bangladesh, in 2013. He received an M.Sc. degree at Robotics Area in the School of Information Science from Japan Advanced Institute of Science and Technology (JAIST), Japan, in 2018. He has published three book chapters in CRC Press, Taylor & Francis Group, USA, four papers in IEEE Xplore digital library, and some journal research papers. He has joined the conference at Eastern Washington University in the USA. He has been invited as a guest speaker in different countries like India, Bangladesh, Indonesia, Vietnam, etc. His research interests are robotics, IoT, Drone, Automation, and artificial intelligence, etc. Now, he is working as an Engineer (Robotics Section, Manufacturing & Production Department) at Onodani Machine Ltd. Fukui, Japan. He worked as an engineer in some companies (Uttara Motors Ltd, Shohagh motors) at Dhaka in Bangladesh. He is a professional member, IEEE, NY, USA. He is the Founder & Chairman of Japan- Bangladesh Robotics and Advanced Technology Research