Prevention of Fake News Propagation Using Blockchain Technology

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Abstract- **The digital information age has been generated a lot of outlets for content creators to publish so called fake news. A fake news is a propaganda that is intentionally designed to mislead the reader. With the wide spread effects of fast dissemination of fake news, efforts have been made to automate the process of fake detection. In this paper, we will focus on facts and not directly on the truth which is somehow related to emotions and personal belief in age of post-truth. In our definition, fact is that things actually happened and truth is that people think or believe that things happened our approach is to hopefully bring consensus eventually of truth to people mind by certifying and broadcasting fact. The three interactive functions on social media- tracking, sharing, creating empower users to keep abreast of popular information to repost any news, to express subjectively determined facts and to even host live broadcast. Through the tracking, sharing and creation interaction among large user base, social media has been able to shape the major civic activities.**

Index terms- **Blockchain, Sentimental Analysis, Naive Bayesian Classifier.**

I.INTRODUCTION

Blockchain has the potential to transform the functioning of a wide range of industries. Its features can increase the transparency and traceability of goods, data and financial assets, facilitate market access and improve the efficiency of transactions. Fulfilling blockchain's potential, however depends on a policy environment that allows innovation and experimentation, while balancing the risks of misuse. Governments will play a significant role in shaping policy and regulatory frameworks that help address challenges presented by the technology, and faster transparent, and fair and stable markets as blockchain develops. Fundamentally, blockchain is a combination of already existing technologies that together can create networks that secure trust between people or parties who otherwise have no reason to trust one another. Specifically, it utilises distributed ledger technology (DLT) to store information verified cryptography among group of users, which is agree through a pre-defined network protocol, often without the control of a central authority. The marriage of these technologies gives blockchain networks key characteristics that can remove the need for trust, and therefore enable a secure transfer of value and data directly between parties. Due to this unique ability, blockchain technology can diminish the role of intermediaries, who can command market power, collect significant fees, slow economic activity, and are not necessarily trustworthy or altruistic keepers of personal information. Although mostly known for its digital financial asset application (like Bitcoin), blockchain technology is poised to have an impact on a wide range sectors. The OECD is exploring the policy implications in a variety of area including health, transportation, agriculture, environment and supply chain management. Blockchain is a growing list of records called blocks that are linked using cryptography. Each block contains a cryptographic hash of the previous block a timestamp and a transaction data. A blockchain is defined as a peer to peer distributed ledger forged by consensus, combined with a system for a smart contracts. Blockchain has a public ledger and all committed transactions are stored in a list of blocks. This chain grows has new blocks are appended to it continuously. Asymmetric cryptography and consensus algorithms have been for a user security and ledger consistency. The blockchain generally has key characteristics of de-centralization, persistency, anonymity and auditability. With these traits,

blockchain can greatly saved the cost and improve the efficiency. There are different types of blockchain available. We have public blockchain, private blockchain and hybrid blockchain.

II. ARCHITECTURE

Blockchain is a sequence of blocks, which holds a complete list of transaction records like conventional public ledger. The structure of blockchain technology is represented by a list of blocks with transactions in a particular order. These lists can be stored as a flat file or in the form of a simple database. Two vital data structures used in blockchain include:

Pointers – variables that keep information about the location of another variable. Specifically, this is pointing to the position of another variable.

Linked lists – a sequence of blocks where each block has specific data and links to the following block with the help of a pointer.
Logically, the first block does not contain the pointer since this one is the first in a chain. At the same time, there is potentially going to be a final block within the blockchain database that has a pointer with no value. A block consists of the block header and the block body as shown in Figure. In particular, the block header includes:

Block Version: it indicates which set of block validation rules to follow.

Merkle Root Hash: the hash value of all transactions in the block.

Timestamp: current stamp as seconds in universal time since January 1, 1970.

nBits: target threshold of a valid block hash.

Parent Block Hash: a 256-bit hash value that points to the previous block. The block body is composed of a transaction counter and transactions. The maximum number of transactions that a block contain depends on the block size and the size of each transactions.
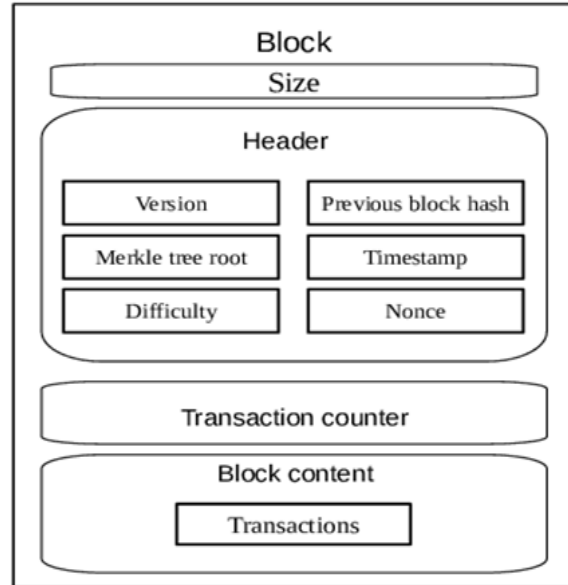

Fig 1.1 Block Structure

III. EXISTING SYSTEM

The term AI blockchain platform for fighting against the propagation of fake news and focuses on exploring to interventions technologies to encourage and reward factual news sources as a way to value and promote truth for society. It describe steps for building the factual database, generating the blockchain supply chain graph, and developing the blockchain based crowd sourcing fake news ranking mechanisms. It also review the state of fake news research from the social aspects, and provide research issues and technical challenges which additional interdisciplinary research is needed to get more understanding the fake news propagation phenomenon. The problem of detecting fake news from different angles like natural language processing, knowledge graphs, computer vision and user profiling. It has been shown that for consistent results, a multimodal method is required. Where the current multimodal state of the art suffers from a problem of not being able to learn from fake news detection problem as a primary task. There is still room for improvement on longer length articles and more complex fusion techniques to understand how different modalities play a role in fake news detection.

IV. PROPOSED SYSTEM

In this system, advanced technology blockchain has been used. Blockchain can be leveraged to preserve and verify the integrity of the news and other multimedia content being shared online. In this section, we present the blueprint of a blockchain-based framework that relies on smart contracts for fake news detection and prevention. Our system mainly focuses to prevent the forwarding of suspicious link and text. This system focuses on fact and not the truth. Fact is the thing that really happened and truth is the thing which people listen, think or believe.

In our social networking website we allow the user themselves to post the fake content (link, text, articles) into the newsroom. Whenever the user post such contents it will ask whether it is inappropriate, rumour, abusive and it will also ask us to enter the reference source link and the reason behind the fake content. Based on the number of spam reports and views a graph has been generated. This graph is known as news trustability. The graph consists of user based trustability and content based trustability. So that the user will be aware of such fake content.
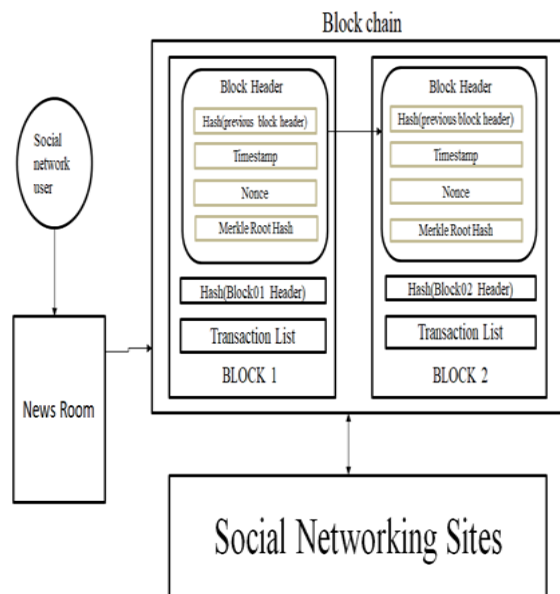
V. SYSTEM ARCHITECTURE

Fig 5.1 System Architecture

The user in the social network post any kind of message or link, which goes into the newsroom and the text in this newsroom then gets into the blockchain where the message posted by the user gets compared to check if that particular news is already present in the blockchain or not. If the posted message is not present inside the blockchain then the news gets posted in the social networking sites. If the posted news is fake one then the user can use the option called report spam to register the message as a fake one in the newsroom. As a result the graph will be displayed using sentimental analysis representing the number of percentage the particular message has been reported as spam.

VI. MODULES

Article Post Module
In this module, new users are allowed to register their details, the user will get the access permission. After that user can send any post to others on this site. When posting, words in the post are compared to the censoring words created by admin. Here, any censoring words are comes on that post, the post should not published to anyone on this site.

News Room Module
This module enhances the users to upload the images in social networks with limited file size. After successful upload of an image, that image has a button (such as like, share and spam) to indicate whether this post is spam or not, every post reported as spam will send to news room.

Spam Report Generation
In this module, Spam post will be indicated based on content and user activity. Sentimental analysis is used to indicate the amount of spam reported for a particular post.

Trustability Graph Report
Spam report will be generated based on who all are marked as spam by the user and spam by the content. Report will be generated in the graph format.

VII. TECHNIQUES USED

In our system we use Sentimental Analysis technique in spam report generation. We have discussed how a sentiment is extracted from a tweet/text using our own social media website dataset. It's a place where the users posts their views and opinions based on the situation. The first classification is performed on

tweets using naive bayes classifier. Each tweet is represented in the form of sentiment state in terms of positive, negative and neutral. The aim of this project is to evolve a classification technique which gives accurate results and automatic sentiment classification of an unknown tweet by predicting the future. In this paper, sentiment analysis is done on Twitter data. Our main aim is to perform analysis on these tweets and conclude the tweets which are positive and negative.

So in order to classify data first, we need to perform the following steps,

- Tokenization: It is a method that divides the variety of document into small parts called tokens. These tokens may be in the form of words, numbers or punctuation marks.
- Stop words: These are the common words that are to be ignored which reduce the size of the dataset also the number of words (tokens).
- Bag of words concept is applied to these tokens. A bag-of-words is a representation of text that describes the occurrence of words within a document.
- Finally, our classification technique naive Bayesian classifier is applied which calculates the probability of all words in the document and gives the result i.e., probability of each tweet in both positive and negative.
- Results show the probability of each tweet saying whether the tweet is either positive or negative.

NAIVE BAYES CLASSIFICATION

Naive Bayes classifier is one of the supervised classification technique which classifies the text/sentence that belongs to particular class. It is the probabilistic algorithm which calculates the probability of each word in the text/sentence and the word with highest probability is considered as output. Bayesian theorem,

$P(b \mid a) = [p(a \mid b) * p(b)] / [p(a)]$

Now representing **a** as a set of words x1, x2, x3……

$P(a \mid b) = p(x1, x2, x3….xn \mid b)$

$P(b)$ = total probability of a class which gives the frequency of class b.

VIII. IMPLEMENTATION

In our social network site the user first have to register themselves to log in to the website. To complete the registration process securely OTP is generated to the registered mobile number. After logging in to the website a couple of menus are listed such as profile, my privacy, friends post, add post, manage group, group post for performing various kinds of activities. User profile consists of the user details like user name, mail id, contact number. My privacy is mainly focused to provide user with customized experience in which the user can add keywords that the person does not wish to see about. In friends post one can send request to their friends to connect with them, who are using the same environment. Also friend's post can be viewed in this part of the page. Further this page provides user with visibility features such as only this friend, to all, friends of friends. View post option takes the user to the page where the posted image, number of views, spam and news trustability are there. If the user finds the posted feed as spam he can report the spam just like, share and comment button.
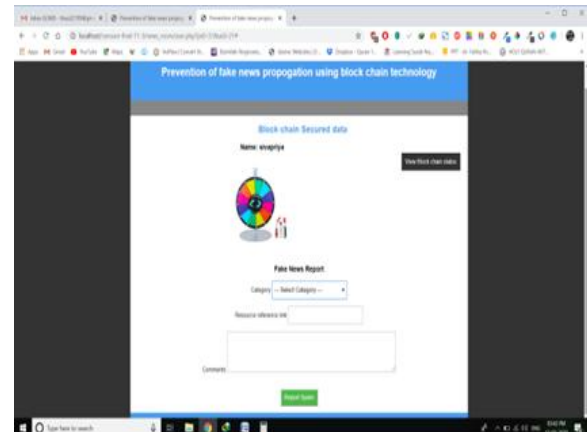

The reported spam takes the user to the newsroom where he must first register himself to login. Then after logging in to the page, the new page asks about the category of the post, resource link and comment.

The user can also view the status of the blockchain. The status about entering the blockchain, encrypting the data, secured block storage, fetching reports from blockchain, decrypting data block and secured data transactions are displayed in this page.

Now the news trustability shows about the reference link, reason and category in encrypted manner. Another option decrypt data is present which further decrypts the encrypted data. Once decrypt option is clicked, after the loading process it asks for the private key and after the user giving the private key the data is decrypted.
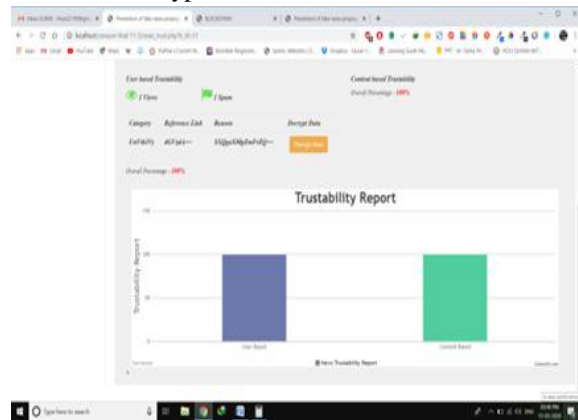
Finally a graph based on user and content based report is generated using which the trustability graph is generated.

IX. CONCLUSION

There is a serious concern about the raising amount of fake news and how fast they spread all over the world. This paper uses an AI blockchain platform for fighting against the propagation of fake news and to explore societal interventions Technologies are used to encourage and reward factual news sources to value and promote truth for society. The fake news may have severe political consequences as well. The importance of identifying the fake news has grown.

This proposed model has strong expandability. This can easily absorb other features of news. The dataset in this paper focuses on the user posted articles and the links. The major challenge of fake news detection stems from newly emerged events on which existing approaches only showed unsatisfactory performance. This system consists of a blockchain network to conduct the blockchain transaction and create the news supply chain graph.

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