**Abstract:** One of the dangerous misuse of social media is spreading fake or misleading news which can be harmful for our society. A fake news is difficult to identify and prevent from spreading because it can be of many forms in a digital platform. Because news data is more scattered and unstructured than conventional analog system. That’s why digitally detecting fake news even more difficult, even though with the help of advanced technologies like machine learning, deep learning. But recently block-chain showed promising result to identify the source of a news, even in a complex network like social media. In this report, an approach to detect fake news by identifying their sources on the social media by using block-chain technologies is proposed.

**Introduction:** As the current generation is more relying on the internet and especially on social media, data is generating in a rapid order and in an unstructured manner [(Kai Shu et al., 2017)](#r6). News is a kind of data which also transmitted through the digital networks very frequently. But it is losing its authenticity more often now because it is now generating from uncountable sources. Literally, anyone can post a news and reach thousands of reader’s eye. And it is sometimes published without any verification.

Spreading of fake news essentially indicates manipulation of original content, misleading information, completely false or unsubstantial news which can highly impact the society or any reputation [(Chengcheng Shao et al., 2017)](#r8). Fake news can be identified as a social diseases and it is a really difficult job to distinguish between fake and real news. Even for humans. And that’s why it managed to attract global attention [(Antino Kim et al., 2019)](#r7). In recent years in the lights of modern technology, many methods of automatically detecting fake news were established. Many approaches using advanced and emerging technologies are introduced by researchers. Block-chain is one of most promising technologies proposed by several literature to prevent the spread of fake news on social media and internet by identifying the source of the data.

Block-chain technology is essentially distributed blocks of data which is immutable, secured and encrypted when it is transmitted from a source to a destination. As block-chain manages dynamic data storages, it validates and stores data in an order hence keeps track of the individual blocks. So, this technology can be used to backtrack and find the original source of data [(Wenqian et al., 2018)](#r1). By implementing block-chain technology unreliable and untrustworthy sources of news on the social media can be identified and ignored.

In this report, a novel approach to identify the sources of any news is proposed and based on that it will be easy to determine if the news is authentic or fake.

**Related Works:** Block-chain is still an emerging technology and growing its dominance over different domains. Many researchers are trying to solve real life problems using this new technology. Block chain technology uses the distributed data storage structure, using cryptography, consensus algorithm, intelligent contract, to realize tamper-proof, forgery and traceability of information in the process of information collection, transfer and sharing [(Wenqian et al., 2018)](#r1). Authors showed traditional data tracing technology to extract source of the news in the paper. [(Tee and Raja, 2019):](#r2) showed a novel combined theoretical framework which incorporates block-chain and artificial intelligence to verify news content, streamline advertising, and prevent fake news from social media. And also provided its effectiveness by running simulation on realistic datasets. [(Mohamed, Emad and Wael, 2019):](#r3) suggested reengineering the social networks as decentralized networks, where users are represented as peers can be a solution to this problem. In decentralized networks all the peers have control over data but with data privacy and protection. And at each of these nodes (peers) data is validating. It is like two-factor authentication which also showed a promising result. [(Adnan et al., 2019):](#r4) describes block-chain model. [(Steve and Martin, 2017):](#r5) showed how data can be encrypted using public-key cryptography and usage of cryptographic hash functions. They also discussed how we can implement data integrity for detecting fake news. By data encryption, a public and a private key can be generated along with the source information, which will help us to find the source of the news.

**Problem Approach:** In this report, an approach for solving the fake news problem is proposed. The main focus of the solution will be finding answers to a few question as follows, how news data can be preserved when it is transmitted over an unstructured [(Kai Shu et al., 2017)](#r6) and complex network like social media, is encryption using cryptography enough to protect data integrity, how to Identify the source by data tracing and by using public keys, how to find out the reliable and trustworthy sources, by identifying the source how can we determine the news is authentic.

**Proposed Solution:** Block-chain provides decentralized data distribution among peers with data integrity, privacy and protection. The solution model will be a block-chain based network where every user will be a single node and news data will pass from one node to another as blocks. Data will be stored and validated in each node, in other words, encrypted using cryptography with a public. To transmit a news, in the data the source will also be hashed inside, so that it can be tracked when it’s needed to find the source of the news using the public key. A classifier will identify the source of news as reliable or unreliable.

**Milestones and Projected Timeline:** Milestones and timelines are as follows,

Milestone 1 - April 3rd, 2020: Background study of existing projects, reading essentials, Identifying datasets

Milestone 2 - April 10th, 2020: implementation of Block-chain prototypes and build a machine learning classifier to classify the news source as fake or authentic

Milestone 3 - April 20th, 2020: Implementation of the block-chain system with the all in a system. Run simulation on a dataset and compare results by fine-tuning the whole system.

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