Research Proposal Transcript

Dear Dr Karen, this is Ying Chan from Hong Kong.

This is the Research Proposal for the Research Methods and Professional Practice module from November 2022 in Unit 10.

I chose the topic 4G Implementing Cyber Security tools and/or techniques in Detecting medical misinformation on a social media platform of Twitter.

As regards my last Literature Review, identified the strategy of Twitter and the limitation of the existing technology.

In this presentation, I will propose a methodology for implementing blockchain on citations to ensure the medical information on Twitter is correct.

This methodology is respect Twitter's values of openness and transparency.

It can be an enhancement of the human intervention Birdwatch rating system.

As regards the Birdwatch, instead of deciding whether the information is fake or not, Twitter provides additional information and rating.

Here are the 2 research problems.

Video analysis must be transformed to text or a picture using artificial intelligence or machine learning technology to determine if text content has been altered.

Content, especially video, has shown to be reliable with blockchain technology.

There is a possibility that an organization will be prejudiced if a responsibility to verify accurate news is entrusted to it.

Additionally, the company will be responsible for handling the entire validation responsibilities.

The government could exert pressure on them in some severe circumstances.

In contrast, we may provide a method for Blockchain where validate with the source video.

These 6 research sample questions can determine how the users thought about the medical uncertainty information and the feasibility of the proposed methodology.

These questions mainly ask about awareness of medical misinformation and the intention of the people to fact-check in the survey.

By receiving the number of agreements with the following statements, which meaning tends to have needs.

The research questions are to find out:

What other strategies and tactics have been suggested by earlier studies to use blockchain-based in social media?

What are the current issues and constraints with social media blockchain applications?

What are the gaps that potential future research might fill?

The Aims and Objectives are to provide accurate citations and source information to users.

Calculate the percentage that matches the source.

Avoid the pretended medical source video or incorrect citation.

Able to validate even if the source video or URL is unavailable.

Shorter the blockchain, reduce complexity, pointless to alter blockchain.

Comparison of the number of frames and storage size of the blockchain needs.

Comparison of the accuracy, efficiency, speed, and controllability by simulation

The first key literature related to the project:

Fake News Detection in Social Media using Blockchain

open brackets Paul et al full stop comma 2019 close brackets

Their plan is to include social media in a blockchain so that ad hoc users, such as journalists, will serve as news verifiers.

They can independently verify news freely because of their anonymity.

Therefore, immune to bias and outside pressure from any group or individual.

In Figure 1, the news will distribute as a transaction in such a chain after being published.

A request to validate the news will be sent to the validator users once it reaches a specific level of virality.

They will act as a validator by giving the news a correctness rating.

The truth of that news will be the interpretation of those values.

The decentralized and anonymous system will make their verification more dependable and transparent.

It is quite similar to Twitter's Birdwatch rating system mechanism.

The second key literature:

Short Video Copyright Storage Algorithm Based on Blockchain and Expression Recognition

open brackets Yang and Dingguo comma 2022 close brackets

This article proposes a blockchain-based architecture for digital copyright storage for short videos.

The hash value of multiple keyframes in a video is used as the judgment basis when a suspected violating copyright video is detected in a hash collision. To put it another way, the storage architecture switches from online storage of short video works to chain stores of keyframe information, changing the content stored in the block such as the "hash value of multiple videos" accordingly.

Additionally, the amount of keyframes is modified by establishing a threshold, and several keyframe selection bases are selected based on various review standard processes, which enhances the storage architecture's resilience and effectiveness.

It inspires me with the use of the hash value of multiple videos that can be related to different blockchains.

The third key literature is:

Blockchain-Based Approach for tackling Deepfake videos.

open brackets Patil and Chouragade comma 2021 close brackets

Blockchain technology is suggested in this study to combat deep fake videos. The original artist, metadata, and video frames are the essential components of the suggested model.

An input video is made by the original creator, also known as the trustworthy owner. The original artist must complete the registration on the Distributed File System before the first video is used as input.

On IPFS, the video frames and the associated metadata are kept, and a unique hash is generated for each video. After then, the hash value is kept on a blockchain.

This demonstrated the Blockchain data structure and reduced the blocks by the number of frames used from the video.

My Proposed Methodology is to build a special add-in for the video editor to store blockchain when cited to medical video.

For the purpose of building smart contracts on various blockchain systems, Solidity is the most famous object-oriented programming language.

The solidity struct in Figure 4 shows the data stored in the blockchain and the function to get source data.

Such as the requester user ID, source URL, author, and timestamp.

In addition, the function below is to look up the video data by the video ID.

Figure 5 demonstrated how the video blockchain was constructed to determine the proportion of source videos that match.

In this illustration, two medical news videos A and B have been merged into the main video.

If each block was configured to produce one frame every second, a one-minute video would require 60 blocks to be produced.

As a result, these blocks are connected to form a blockchain for the video.

Assume that the source video's Medical News A is a one-minute clip.

By creating the blockchain from Medical News A, a blockchain with 60 continuous blocks will be created.

The frame's hash and the hash from the previous block were both saved in each block.

Additionally, the information from the source video is located in the block's struct, which can refer to the source video and retrieve the blockchain for comparison.

Considering that the first minute of the four-minute film was used in Medical News A.

It will return the result with 25% of the unique continuous blockchain matched to the original medical video.

Afterwards, Medical News B can be computed using the same method.

This methodology results in the collection of citation data for the uploaded video.

An example of the user view is displayed in Figure 6.

It demonstrates that the citations for this medically informative video are 25% from Author Dr A and 20% from Author Dr B, including the separate URL for reference.

The next slide is about ethical considerations and risk assessment.

This table listed the description of the possible risks for each risk level.

For the lower level that is an acceptable risk

Including video adjustments impacts during editing, such as adding video subtitles or adjusting colour.

The impact of data accuracy, for example, the source video is too old or with a broken link.

The middle level that estimated as a significant risk:

The research result shows that this Blockchain methodology is inefficient.

The data is inaccuracy.

The video editor add-in is incompatible or having issues.

Or even the Blockchain contains unfixable bugs such as the Blockchain can alter or pretend by attackers.

The higher level that estimated as an unacceptable risk including copyright issues of the citation, privacy data breaches and Legal issues.

The next one is the description of the artefacts that will be created.

This project will build a special add-in for video editors which use for generating the frames to blockchain to store citation data of the medical video.

To ensure the citation data is correct, the verification program will build to check the continuous blockchain and calculate the percentage that matched the source medical video.

Finally, the timeline of proposed activities is shown in Figure 7 Research timeline plan.

The research questionnaire and development of the add-in for the video editor are planned to start in week 1 and end in week 8.

The Development of the verification program can start during working on the add-in which will start in week 3 and end in week 8 too.

4 weeks have been planned for testing and debugging, targeting from week 9 to week 12.

The simulation plan is to run from week 13 and end on week 14.

Gathering data is planned to take 2 weeks, from week 15 to 16.

At last, the analysis data is planned to start on week 17 and finished the whole project in week 18.

I hope the proposal has been considered favourably.

The references list is the following.

That is the end of my presentation, thanks for watching and have a good day.