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The Algorithms of Social Media for Science Education to Cybercrime Reduced

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Abstract: The purpose of this paper is to describe how the algorithm of the social media platform as an effort of science and ethics education for the community to reduce criminal behaviour in cyberspace. The advantage of the internet as cyber media that can be enjoyed by the public is the easy and cheap way to access it. With the internet, everyone who accesses it can find out all the information from around the world. information from various parts of the world. The function of the internet can be education, information, and even entertainment. However, along with that, the use of the internet also needs vigilance for children who are its users. users. Because there are often adult sites that should not be visited by them. The participation and supervision of parents is very important in this case.becomes very important in this case.This study is theoretical with a qualitative descriptive method. The approach used is a literature study by searching for various relevant sources. The data sources are reputable and accredited scientific journals, academic papers, videos, books and other substantial sources. These sources will be carefully elaborated to obtain a structured academic description. The study found that there is a need to design algorithms for various social media platforms that can serve as media for science education. In addition, ethical content is needed to educate the public about virtual crime. Science and ethics content play a role in reducing the occurrence of cybercrime.

Keywords: Algorithms; Cybercrime; Science Education

Introduction

The advancement in information and communication technology which continues to sparks until the appearance of internet today that seems unstoppable (Audi & Ali, 2019; Munti & Syaifuddin, 2020), where society currently served by the existence of information and communication technology and the ease of using internet without boundaries in Social Media (Cyberspace) (Danuri, 2019; Feather, 2013). The definition of cyber world by means the virtual world, because every individual can be intertwined and communicate to each other, wherever and whenever they can be connected in one place so called the cyber world (Pratama, 2012). In this context, the society sees this global information technology as an important need or daily need to gathering information efficiently (Disemadi, 2021).

The ease which provided by the existence of internet in accessing all forms of information whole over the world without involving physical boundaries and interactions (Hermawanto & Anggraini, 2020; Kellerman, 2014). However, if it seen through another point of view that the use of internet which is almost out of control would bring negative impact to the society by the emergence of crime in cyberspace, the number of online crimes that often called as cybercrime without people realized that it has become a new model of crime which happening lately in so many countries today, including in Indonesia which has occurred since 1983 (Widodo, 2013).

Crime in the cyberspace or so called cybercrime is an activities of individuals, groups, organization or legal

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entities by the use of a set or more computer stuff to commit crimes and this computers has been set as targets of crime (Jahankhani et al., 2014; Payne, 2020). Cybercrime is a general term to describe acts committed by a person or group of people who are experts in the field of computer/informatics to the detriment of another person or group of people (Ramailis, 2020). The unlimited access to social media provides access for cybercrime to continue to spread widely, because the platforms which available on social media are encourage users to speak freely without any interfering by censorship and control which seen as quite weak. The breadth of access and variety of features across social media platforms reflects how algorithms are built to provide incredible convenience.

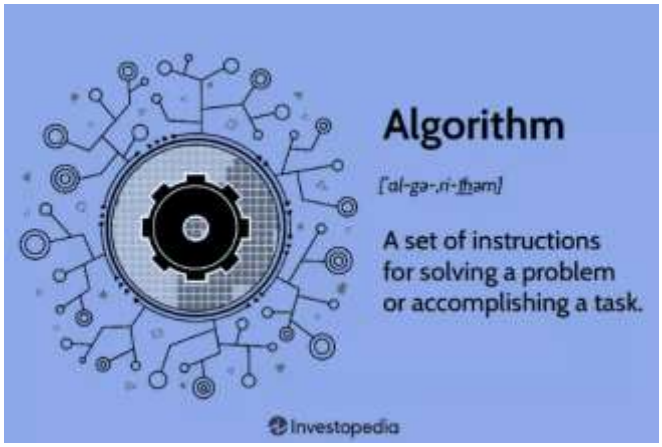

Figure 1. Definition of algoritm. Source: www.investopedia.com

This relates to how social media algorithms are constructed by IT experts. The algorithm developed for creating efficient schedules of deliveries, belongs to the category of heuristics (Konstantakopoulos et al., 2021; Lee et al., 2017; Ongcunaruk et al., 2021). Cyber world is refers to virtual world, so it can connect everyone anywhere and anytime in just one click (Firu et al., 2021). Therefore the need of cyber ethics in conduct activities in the cyber world would be priority (Lobschat et al., 2021). But there is main problem which faced by cyber ethics, namely the existence of dysfunctional human behavior.

In the cyber ethics and legal issues, its problems would be theft, piracy, hacking, harassment, misinformation, obscenity, plagiarism, and viruses. In cyber ethics, it would fully discuss about the behavior of cyber users and How user behaves in cyberspace. Therefore, in-depth research towards the ethics in the use of social media is really needed in order to minimize the occurrence of cybercrime.

Method

The methods used in this research can be explained narratively and graphically as described below. The explanation of the research method is carried out in a certain order according to the logic flow of the researcher in translating reality into something that is a proposed solution. This is about qualitative research as a case study and that has been associated with qualitative methods of analysis (Patton, 2002).

In the first stage of the research method using actual and factual situation analysis (Sileyew, 2019), as well as considerations based on literature. The second stage by finding a problem, the problem raised in this research is how to implement a cyber media in public science education. In summary, a qualitative descriptive approach needs to be the design of choice when a straight forward description of a phenomenon is desired (Lambert & Lambert, 2013).

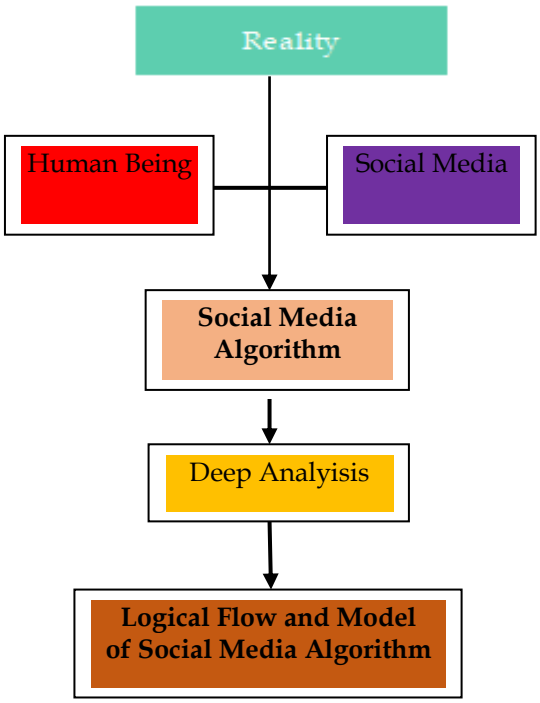

Figure 2. Research Flow Source: Created by Author

The selection of an appropriate approach to answer research questions is one of the most important stages of the research process; consequently, there is a requirement that researchers can clearly articulate and defend their selection. Those who wish to undertake qualitative research have a range of approaches available to them including grounded theory, phenomenology and ethnography (Doyle et al., 2020).

Result and Discussion

Algorithm and Social Media

A social media algorithm is a compilation of rules and data that make decisions about what users want to see on the platform (Balaji et al., 2021). The social media sites create unique algorithms for every person who uses the site which means no two people will have the exact same social media news feed. Essentially, social media algorithms analyze user behavior and prioritize content the platform believes the user wants to see and is most likely to engage (Guess et al., 2023; Reviglio & Agosti, 2020; Saurwein & Spencer-Smith, 2021).

Each major social media platform has its own version of a "news feed" style algorithm. Below we'll dive into the specifics of feed algorithms for Facebook, Twitter, Instagram, and TikTok, but here's an overview of what the algorithms for these platforms factor in when prioritizing content. Analysis of social network content is difficult because conversation on social networks differs in many ways from normal conversation. Contents are enriched with emojis, hashtags, mentions and spams. They need to be cleaned and the raw text needs to be processed to find the information behind it (Milano, 2018).

Inferential analytics may have some benefits. For instance, it can be a tool to fill gaps in fragmentary datasets or check the accuracy of available data by matching inferred data with the contested data. In this way, datasets enriched with many inferred attributes are likely to have higher levels of completeness and precision. In big data analytics, completeness and correctness of data is not a strict condition but can contribute to getting more well-defined and reliable results (Fosch-Villaronga et al., 2021). In connection with that, the government requires to continue to make an efforts to take persuasive, preventive and educative steps with a little repressive action as possible for citizens who are currently experiencing this technological confusion. Therefore, the government needs to be more intensive in coordinating and partnering with religious leaders, community leaders and universities need to be teammates and finding appropriate solutions so that peace and equilibrium can be maintained as well as preventing the escalation of the emotions of community groups which turn into destructive actions, due to unconsciousness in utilizing this internet technology.

The algorithms must have five interrelated characteristics. There are five characteristics that must be fulfilled in the creation of an algorithm (Mendling et al., 2023), namely: *Finiteness:* the algorithm must stop after completing a finite number of steps and reaching its final destination. A programme that never stops and keeps running does not have a correct algorithm; *Definiteness*: each process in the algorithm must be clearly defined and unambiguous to ensure there are no errors in producing the output; *Input:* the problem for which the solution is sought. Algorithms can consist of having one or more inputs to be processed; *Output:* one or more output values produced as a solution to the problem or input. The output can be a message or a quantity related to the input; and *Effectiveness:* Each step in the algorithm should be simple so that it can be implemented in a timely manner.

The steps and dimensions in the construction of social media algorithms can be seen in the diagram below. This construction is a kind of simplified picture that emphasises the possible elements that must appear, especially in relation to ethical issues.

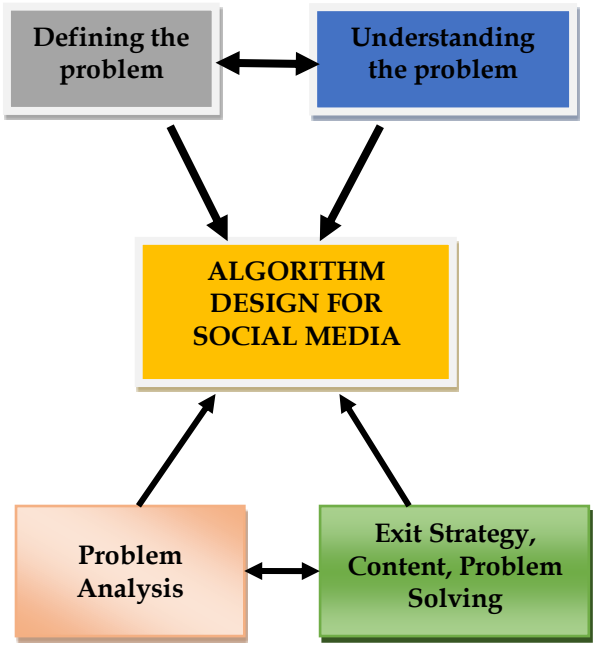

Figure 3. Imagined Design of Social Media Algorithm

By knowing the problem to be solved, it can be mapped out the content of the central issue that will help determine the constraints of the algorithm on a social media. Social media algorithms may contain intelligent systems that automatically close access to certain content that leads to issues of sara, pornography, cyber bullying, defamation. The algorithm should be sensitive to elementary societal problems that are present and inseparable from the realistic basis of life.

Digital Content: Science Education and Ethics

The higher the level of interaction of like, comment, save, and share (interest) carried out by users can have a positive effect on the intention to be bound. Results Other results can also be interpreted that timeliness,

which is explained as the timeliness and accuracy of content, has an influence on the intention to be bound on Instagram content has an influence on the intention to be bound on Instagram. The higher the content accuracy(timeliness) can influence the intention to be bound. The last test shows that the high interaction relationships between Instagram users can influence individuals to always be bound on Instagram. The higher the relationship can increase the intention to be bound (Setiyanto et al., 2021).

One of the contents that must be directed by social media algorithms is ethical issues (Cheng et al., 2021). This is an elementary problem that raises public awareness of how ethics is the main menu of a long list of content on digital media platforms. Even though in Indonesia there are regulations that can ensnare cybercrime actors, but in fact that this has not been implemented optimally. This can be encountered with obstacles in handling cybercrime cases, such as: The existing legal instruments are considered by some to be inadequate. The Law No. 11/2008 Concerning "Information and Electronic Transactions" Could be a new shield for users of technology and informatics in achieving legal certainty.

The ITE Law has not yet been made in the process of its implementation. The ITE Law is still abstract in nature, causing hard to proving it. The ITE Law is shaped by criminal acts, especially from the Criminal Code which associated with the development of information technology as a tool or instrument in committing crimes. Verification is very important by acknowledged that information technology infrastructure has not been fully accommodated in the Indonesian Criminal Code system, so it is hoped that provisions regarding the use of information technology are strictly regulated so that there is no more doubt.

Ethics can be loosely defined as “the right thing to do” or it can be described as the moral philosophy of an individual or group and usually reflects what the individual or group views as good or bad. It is how they classify particular situations by categorizing them as right or wrong. Ethics can also be used to refer to any classification or philosophy of moral values or principles that guides the actions of an individual or group. Ethical values are intended to be guiding principles that if followed, could yield harmonious results and relationships. They seek to give answers to questions such as “How should I be living? How do I achieve the things that are deemed important such as knowledge and happiness or the acquisition of attractive things?” If one chooses happiness, the next question that needs to be answered is “Whose happiness should it be; my own happiness or the happiness of others?” In the domain of social media, some of the ethical questions that must be contemplated and ultimately answered are.

The lack of supervision of Internet use are leads to the cybercrime. This crime uses internet access which spread widely. The limited number of expert staff in conducting investigations is a factor which affecting the success of police in eradicating cybercrime cases, with minimum number ofexpert becoming an obstacle in eradicating cybercrime cases that cannot be solved in efficient time. This weakness has been fully use by the cybercrime actors In performing their activities more freely. Indonesia’s cyber police personnel only have 58 members, this absolutely cannot be match with the case reports that included in the police records regarding cybercrime.

Social media and science education are not two phrases that often intersect. However, here at the Smithsonian Science Education Center we are working on digital initiatives to help provide new types of teacher resources through various social media channels. Since the SSEC's mission is to improve the learning and teaching of science for all students in the United States and throughout the world, going digital is a great way to enhance our print resources and reach more people. Social media platforms can provide teachers a multitude of resources and guides to teach various materials.

Twitter is a great resource platform. On our SSEC Twitter, we keep our followers up to date with articles on STEM initiatives, postings of interviews with Smithsonian scientists, links to our educational games, and more. If you are looking for professional development programs, Twitter is a great way to find out when the next SSEC events are taking place. Users can search Twitter for the terms "science", "education", or "STEM" or the hashtags "#EdChat", "#SciEd", "#SciChat", or "#STEM" and find plenty of Tweets focusing on science education. Simply browsing these Tweets can help educators stay up to date on the latest news and resources.

Another great resource is Pinterest. The SSEC Pinterest is compiled of boards aimed at professional development and educational resources as well as fun information like science jokes and seasonal science related activities. Pinterest is highly visual and is very focused on high quality images, which make it a great place to find resources for students who may have an easier time learning through visual means. Also, Pinterest has different categories including an Education category and a Science and Technology category. The Education category has plenty of neat resources for teachers ranging from activities to how to decorate your classroom.

Cybercrime Cases that Happened in Indonesia

Several types of cybercrime in cyberspace that occur on social media, are: Defamation Case. Criminal defamation through social media are mostly handled by the police. This defamation cases as 45% of cyber crime cases was handled by the Directorate of Cybercrime, Bareskrim Polri. One of the defamation cases that occurred on social media taken from www.liputan6.com is the Ervani Emi Handayani case. A resident of Gedongan, Bantul, Yogyakarta was reported to the police because the way she wrote status on Facebook regarding her husband's transfer on June 9, 2014. On July 9, 2014, Ervani was summoned by the police for questioning; Dissemination or Hate Speech Cases. Cases of hate speech accounted for 22% of cyber crime cases handled by the Directorate of Cyber Crime Bareskrim Polri. One example of a hate speech case is the case of Ahmad Dhani, a musician from the capital city of Jakarta who was then reported by a group supporting Ahok-Djarot, namely the BTP Network, in connection with dissemination of information that leads to hatred.

Conclusion

The study found that there is a need to design algorithms for various social media platforms that can serve as media for science education. In addition, ethical content is needed to educate the public about virtual crime. Science and ethics content play a role in reducing the occurrence of cybercrime. Therefore, the authors have suggested the Government to consider in making a new Regulation which clearly stated relates to the implementation of the ITE Law up to its technical implementation. In addition, every internet and social media user should stand up for themselves to prevent this cybercrime, it can be done by protecting computers from viruses, maintaining privacy, securing accounts, avoiding hoaxes as well as keeping an update information, spreading positive information and noticing ethics when using social media.

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Author Contributions

In this study, all researchers contributed actively with the tasks that were carried out together. In other words, this research was supported by equal distribution of roles and contributions of all authors here.

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Conflicts of Interest

In this research, there is no tug of interest and or hidden interests among the researchers.

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