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IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE BY KOMINFO IN THE ENFORCEMENT OF PORNOGRAPHIC CONTENT ON SOCIAL MEDIA TWITTER (X)

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Abstract: This research is motivated by the increasing prevalence of pornographic content, which has significant psychological, social, and economic impacts on Indonesian society. The study examines the application of Artificial Intelligence (AI) by the Ministry of Communication and Informatics (*Kementerian Komunikasi dan Informatika*, Kominfo) in enforcing laws against pornographic content on Twitter (now known as X). Employing a descriptive qualitative method with a case study approach, the research involved in-depth interviews with 15 key informants. The findings reveal that Kominfo's AI system utilizes a layered detection model integrating computer vision and natural language processing, achieving an accuracy rate of approximately 85% for visual content and 75% for textual content. The system automates around 80–85% of the detection process through deep packet crawling and inspection techniques. Despite these advancements, law enforcement efforts face several challenges, including a high rate of false positives, difficulties in cross-platform coordination, and limited contextual understanding of local cultural nuances. The study concludes that effective enforcement requires developing more adaptive algorithms supported by comprehensive, Indonesia-specific datasets; enhancing coordination with global social media platforms; establishing an integrated task force; and creating a transparency and accountability framework to ensure a safer digital ecosystem.

Penelitian ini dilatarbelakangi oleh meningkatnya prevalensi konten pornografi yang berdampak signifikan terhadap aspek psikologis, sosial, dan ekonomi masyarakat Indonesia. Studi ini menelaah penerapan Kecerdasan Buatan (Artificial Intelligence, AI) oleh Kementerian Komunikasi dan Informatika (Kominfo) dalam penegakan hukum terhadap konten pornografi di platform media sosial Twitter (kini dikenal sebagai X). Dengan menggunakan metode kualitatif deskriptif melalui pendekatan studi kasus, penelitian ini melibatkan wawancara mendalam dengan 15 informan kunci. Hasil penelitian menunjukkan

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bahwa sistem AI Kominfo menerapkan model deteksi berlapis yang mengintegrasikan computer vision dan natural language processing, *dengan tingkat akurasi sekitar 85% untuk konten visual dan 75% untuk konten tekstual. Sistem ini mampu mengotomatisasi sekitar 80–85% proses deteksi melalui teknik* deep packet crawling *dan* inspection. *Meskipun demikian, pelaksanaan penegakan hukum masih menghadapi sejumlah tantangan, antara lain tingginya tingkat* false positives, *kesulitan koordinasi lintas platform, serta keterbatasan pemahaman terhadap konteks budaya lokal. Penelitian ini menyimpulkan bahwa efektivitas penegakan hukum memerlukan pengembangan algoritma yang lebih adaptif dengan dukungan data set komprehensif yang sesuai dengan konteks Indonesia, peningkatan koordinasi dengan platform media sosial global, pembentukan satuan tugas terpadu, serta pengembangan kerangka transparansi dan akuntabilitas guna menciptakan ekosistem digital yang aman dan berintegritas.*

Keywords: Artificial Intelligence; Pornographic Content; Law Enforcement; Twitter (X)

INTRODUCTION

Technology is one of the real forms that humans have developed and civilized, with the presence of technology civilization and human behaviour has changed to be more efficient and easier. Humans always try to create. Something that can facilitate their activities, this is what drives the development of technology which has produced many tools as tools to facilitate human activities, even replacing the role of humans in a particular function. Technology plays an important role in the era of globalization, where technology has become an inseparable part of everyday life. The development of technology has changed the structure of society from a local to a global society. This change is caused by the presence of information technology. The development of information technology is combined with media and computers which then gave birth to a new tool called the internet (Abdul Wahid dan Mohammad Labib 2005)

The rapid development of digital technology has brought about significant changes in the way people communicate and interact, particularly through social media platforms such as Twitter (X). In recent years, we have witnessed a tremendous transformation in the way information is disseminated and received by the public. Social media has become a dominant communication tool, allowing individuals to share thoughts, photos and videos quickly and easily. However, this ease of access and dissemination of information also brings new challenges in the form of the increasing spread of pornographic content that violates social and legal norms in Indonesia. According to data from the Ministry of Communication and Informatics, more than 1.2 million pornographic contents were identified in 2023 across various digital platforms, with 27% of them coming from Twitter. This figure shows the

extent of the problems faced by society in dealing with inappropriate and harmful content (Kominfo, 2023).

The impact of pornography has become a serious concern for various groups considering its multidimensional effects. Based on research from the Center for Health Studies Mental Indonesia, exposure to pornography at an early age can lead to psychological developmental disorders, behavioral changes, and potential addiction that affects cognitive and social functioning (Pusat Studi Kesehatan Mental Indonesia 2023). For example, children who are exposed to pornographic content tend to have difficulties in establishing healthy interpersonal relationships, and have a distorted view of sexuality. Studies conducted by the Ministry of Women's Empowerment and Child Protection show a correlation between pornography consumption and an increase in sexual violence cases, where 78% of perpetrators admitted to being exposed to pornographic content before committing the crime. This shows that there is a close relationship between exposure to pornographic content and aggressive behavior, which can be fatal to the victim (KemenPPPA 2023). Children as victims in criminal offenses are not only physically victimized but mentally harmed including in social media exposure which has a negative impact on children's growth and development.(Chasanah, A. N., & Arifin, 2022)

In the social aspect, research from the Indonesian Child Protection Agency revealed that easy access to pornographic content through social media has contributed to the increase in cases of online sexual exploitation of children, with an increase of 45% during the period 2022-2023. This phenomenon is very concerning, especially in the context of child protection which should be a top priority. Society needs to realize that children are not only at risk of becoming victims, but can also be influenced by wrong norms in understanding sexuality. Thus, the need for real action from the government and society to jointly address this issue is urgent (LPAI 2023)

The economic impact of the spread of pornographic content cannot be ignored either. A study by the Indonesian Institute of Digital Economy estimates productivity losses due to pornography addiction at Rp 28.5 trillion per year, including reduced work productivity and mental health costs. The illegal pornography industry is also closely linked to cybercrime and laundering. This figure shows that the problem of pornography not only affects individuals psychologically, but also impacts the economy as a whole. Dependence on pornographic content can lead to decreased concentration and motivation at work, which in turn affects company performance and national productivity. Furthermore, the illegal pornography industry is also closely linked to cybercrime and money laundering, as reported by the Financial Transaction Reports and Analysis Center (PPATK 2023). The link between pornography and organized crime shows that the issue is more complex than it seems, and requires a comprehensive approach to tackle

In an effort to overcome these problems, the Ministry of Communications and Digital has implemented Artificial Intelligence (AI) technology as part of the digital law enforcement strategy. The use of AI is in line with the mandate of Law Number 44 of 2008 on Pornography

and Law Number 19 of 2016 on Electronic Information and Transactions. The implementation of AI in content monitoring is seen as a strategic step considering the huge volume of data and the need for fast handling. The utilization of AI technology in content moderation receives legal support through Minister of Communication and Information Regulation Number 5 of 2020 concerning Private Scope Electronic System Operator. The AI system developed has the ability to automatically detect and identify pornographic content through image, video, and text analysis with an accuracy rate of up to 85% (Pusat Kajian Digital Universitas Indonesia 2023) This is a significant step forward in efforts to tackle the problem of pornography.

Despite this, the implementation of AI in pornographic content law enforcement still faces various challenges. Research conducted by the University of Indonesia's Center for Digital Studies identified several key obstacles, including the problem of false positives in content detection, limitations in the use of AI in the enforcement of pornographic content. Understanding local cultural contexts, and the complexities of coordinating with global social media platforms such as Twitter (Widodo, S., & Rahardjo, B 2023). For example, AI systems may identify harmless content as pornography due to errors in analysis, which may lead to blocking of content that should not be affected. This is emphasized by Widodo and Rahardjo's study which highlights the importance of a balance between the effectiveness of law enforcement and the protection of people's digital rights (Direktorat Jenderal Aplikasi Informatika, 2023). In this context, it is important to involve various stakeholders, including civil society, in formulating fair and effective policies.

In the institutional aspect, the transformation of the Ministry of Communication and Information into the Ministry of Communication and Digital brings a new paradigm in the approach to digital content regulation. This change brings strengthening to the technological and digitalization aspects of law enforcement, including the development of a more comprehensive AI system. This phenomenon is important to study given Indonesia's position as the country with the fourth largest social media users in the world, with more than 167 million active users. In this context, the government's role in creating a safe and healthy digital environment becomes even more crucial. The implementation of AI in law enforcement of pornographic content is not only a technological solution, but also reflects the government's efforts in balancing digital progress with the values and norms prevailing in Indonesian society.

Regulations related to pornography and negative content in digital media in Indonesia are regulated in various comprehensive legal instruments. The main legal framework that regulates pornography is Law No. 44/2008 on Pornography. This law explicitly defines pornography as images, sketches, illustrations, photographs, writings, sounds, moving images, animations, cartoons, conversations, gestures, or other forms of messages through various forms of media communication media containing obscenity or sexual exploitation. This shows that the law seeks to protect society from the negative impact of pornography. In digital terms, law enforcement against pornographic content is strengthened through Law Number

19 of 2016 concerning Amendments to Law Number 11 of 2008 concerning Electronic Information and Transactions (ITE Law).

The ITE Law provides a legal foundation for the government to block and remove pornographic content on the internet, with criminal penalties for violators up to 6 years in prison and a fine of up to Rp 1 billion. This shows the government's seriousness in addressing the issue of pornography in cyberspace, although challenges faced in its implementation remain. The technical implementation of the two laws is further regulated in the Minister of Communication and Information Technology Regulation No. 5 of 2020 on Electronic System Operator in Private Sphere and the Minister of Communication and Information Technology Regulation No. 19 of 2014 on Handling Negatively Charged Internet Sites.

This regulation provide framework operational framework for Ministry of Communications and Digital to take action against pornographic content, including the use of AI technology in the content detection and removal process. In this context, it is important to ensure that the existing regulations are not only repressive, but also educative, so that the public can understand risks and impacts of pornographic content.

Community involvement in law enforcement against pornographic content is also very important. Communities need to be empowered to report content that violates norms and laws, and be given an understanding of the dangers of exposure to pornography. Educational programs and awareness campaigns should be promoted to encourage people to play an active role in creating a healthier digital environment. In addition, collaboration between the government, social media platforms, and civil society organizations is also key in addressing this issue comprehensively. Overall, the challenges faced in handling pornographic content in Indonesia cannot be taken. Society, government, and related institutions need to work together to create effective and sustainable solutions. By understanding the negative impact of pornography, both individually and collectively, we can take strategic steps to reduce its spread and protect future generations.

The development of digital technology has brought about complex impacts in society, especially in relation to the spread of pornographic content. Despite efforts from the government and relevant agencies to address this issue through regulation and technology, the challenges still require serious attention. Through collaboration between various stakeholders, as well as public education and awareness, we can hope to create a safer and healthier digital environment. Addressing pornographic content is not only the responsibility of the government, but also of all of us as members of society. By doing so, we can reduce the negative impact of pornography and protect the values and norms of Indonesian society.

This research makes a significant contribution to the development of knowledge in the field of AI and telematics law in Indonesia. This research fills the knowledge gap on the implementation of AI technology in the context of digital content law enforcement, particularly in global social media platforms operating in Indonesia. By analyzing the multi-layer system developed by Kominfo, this research presents technical insights into the interaction between AI technology and the national regulatory framework. Secondly, this

research provides a unique perspective on the jurisdictional challenges in digital law enforcement, where national regulations must interact with global platform policies.

The research findings reveal the complexity of harmonizing content moderation standards between Indonesian regulations and Twitter's (X) internal policies, as well as the coordination mechanisms required for effective enforcement. In addition, this research enriches the discourse on the balance between digital law enforcement and the protection of internet users' rights. By analyzing the false positive rate in content detection, the research provides insight into a fundamental dilemma in the use of AI for content moderation: how to maximize public protection while minimizing disproportionate restrictions on freedom of expression. The research also brings a new paradigm in digital content regulation approaches that has not been widely explored in the academic literature by introducing an integrative analysis model that connects three important dimensions in the implementation of AI for law enforcement: technological, regulatory, and socio-cultural dimensions. This approach overcomes the limitations of previous studies that tend to focus on technological or legal aspects separately without considering Indonesia's socio-cultural context.

RESEARCH METHOD

This research uses a type of qualitative research with an analytical descriptive method. The qualitative approach was chosen to enable in-depth exploration of the implementation of the Artificial Intelligence system by Kominfo in law enforcement of pornographic content on Twitter (X). The analytical descriptive method is used to systematically describe the facts and characteristics of the object of research and analyze the relationship between the variables studied. Data collection was conducted through literature and documentation studies, by analyzing official government reports, scientific journal publications, and related policy documents. The data analysis technique uses an interpretative content analysis approach, which allows researchers to identify patterns, themes and relationships in the textual data collected. The validity of the research was strengthened through data source triangulation by comparing various official documents and previous studies to ensure consistency of findings

RESULT AND DISCUSSION

AI in Combating Online Pornography

The implementation of Artificial Intelligence (AI) by the Ministry of Communication and Information Technology (Kominfo) in an effort to prevent the spread of pornographic content on the Twitter (X) platform has become a strategic step in enforcing digital content regulations in Indonesia. This is a response to the increasing spread of pornographic content that requires an advanced technological approach for more effective handling (Kusuma 2023). Kominfo has developed an AI-based surveillance system that integrates machine learning and computer vision technology to detect and identify content that violates the provisions of

pornography in accordance with Law Number 44 of 2008 concerning Pornography I (Widodo, A., & Santoso, H 2023).

The AI system developed by Kominfo uses a layered approach in the process of detecting and preventing pornographic content. In the first layer, the system performs an initial scan using computer vision algorithms that can analyze visual elements such as images and videos. The system uses deep learning models that have been trained with verified content datasets to recognize visual patterns that indicate pornographic conten (Pratama, R., & Susanto, H. 2023)

In the second layer, the system uses natural language processing (NLP) to analyze the text, captions, and comments that accompany the visual content. This NLP algorithm is designed to detect keywords, phrases, and linguistic context related to pornographic content. The system also considers local language variations and slang commonly used in Indonesia (Wijaya, K 2023). The process of handling digital content in Indonesia has undergone significant development along with the increasing complexity of challenges in the digital world. Kominfo, as the agency responsible for monitoring digital content, has developed a comprehensive and structured handling system (Nugroho, A., & Putri, R. 2023)

In the process, content handling includes several critical stages. It starts with automated verification that utilizes a database of restricted content for initial screening. This stage is then followed by manual review by a team of moderators who play an important role in providing contextual assessments of content that requires more in-depth analysis. This process is followed by coordination with social media platforms, especially Twitter, through prioritized channels for the takedown process. Each case is then systematically documented for evaluation and system development purpose

In its implementation, Kominfo's AI system uses a multi-layer approach that combines simultaneous image, video and text analysis. The system is capable of automatically scanning content uploaded on Twitter, with the ability to identify various forms of explicit content through visual and contextual pattern recognition. Based on Kominfo's 2023 evaluation report, the system has shown detection accuracy rates of 85% for visual content and 75% for textual content containing pornographic element (Laporan Kinerja Direktorat Pengendalian Aplikasi Informatika Kominfo 2023)

The implementation of this AI system still faces various technical and operational challenges. One of the main obstacles is the high false positive rate in the detection process, where some legitimate content such as artwork or health education content is sometimes identified as pornographic content. This points to the need for refinement of AI algorithms to better understand local cultural contexts and nuances in determining content categorization (Rahman, B., & Pratama, S 2024)

The effectiveness of Kominfo's AI implementation also relies heavily on collaboration with Twitter as the platform. The takedown process of identified content requires intensive coordination between Kominfo and Twitter, given the differences in content moderation standards and legal jurisdictions. Data shows that of the total pornographic content detected

by Kominfo's AI system, around 65% was successfully removed within 24 hours, while the rest required further verification processes or faced technical obstacles in the removal process social media through the establishment of special communication channels to accelerate the takedown process of offending content (Nugroho, D., & Wijaya, R 2023).

In an effort to increase effectiveness, Kominfo has developed several strategic initiatives, including updating AI algorithms using datasets that are more comprehensive and representative of the local Indonesian context. In Kominfo has also strengthened coordination with other platforms. An evaluation of the implementation of AI in preventing pornographic content on Twitter shows that while the system has made a significant contribution to content moderation efforts, further development is needed to improve its effectiveness. This includes improving detection accuracy, reducing false positives, and optimizing the coordination process with social media platforms. In its implementation, Kominfo faces various challenges that can be categorized into three main aspects. First, technical challenges include difficulties in detecting modified content, false positive issues that can affect legitimate content, and limitations in processing high-volume real-time content. The complexity of analyzing integrated multimedia content is also a challenge (Hermawan, G., & Putri, L. 2024).

Second, operational challenges include cross-platform coordination aspects that require significant time and resources. Differences in moderation standards between national regulations and platform policies often create complexities in the handling process. Limited access to APIs for comprehensive monitoring and the need for continuous updates to databases and algorithms are also operational constraints that need to be overcome (Rahman, S. 2024).

Third, socio-cultural challenges involve aspects of content interpretation based on local cultural contexts. Difficulties in distinguishing between artistic and educational content, resistance from users to automatic moderation systems, and the need to balance user privacy and monitoring effectiveness are crucial issues that need to be considered (Hermawan, B. 2024). In an effort to overcome these challenges, Kominfo has developed several mitigation strategies. Improving AI capabilities through the development of more adaptive machine learning is one of the main focuses. Development A more contextualized content database is also conducted to improve detection accuracy. Strengthening cooperation with social media platforms and increasing the capacity of the moderation team and support system are integral parts of this strateg (Kusaman 2023).The implementation of these strategies has shown positive results in improving the effectiveness of handling digital content. However, continuous evaluation and development are still needed to face the dynamic challenges in the evolving digital era.

AI Rules for Pornographic Content

Indonesia has a comprehensive legal framework for handling pornographic content on social media. The main foundation of this regulation is contained in Law No. 44/2008 on

Pornography, which provides a clear definition and limitations on content categorized as pornography. The implementation of this law is strengthened by Law No19/2016 on the Amendment to Law No. 11/2008 on Electronic Information and Transactions, which specifically regulates the dissemination of pornographic content through digital media.

The Ministry of Communication and Informatics (Kominfo), as the leading sector in digital content monitoring, carries out its role based on the Minister of Communication and Informatics Regulation Number 5 of 2020 concerning Private Scope Electronic System Operator. In its implementation, Kominfo coordinates with various institutions to ensure the effectiveness of handling pornographic content.

Inter-agency cooperation involves several key institutions. The Indonesian National Police, through its Cyber Crime Directorate, plays an important role in law enforcement and investigation of digital pornography cases (Police Cyber Crime Directorate Annual Report 2023). This cooperation regulated in the Memorandum of Understanding between Kominfo and Polri on Cyber Crime Handling

The National Cyber and Crypto Agency (BSSN) also has a strategic role in providing technical support related to cyber security and digital forensic analysis. This collaboration is strengthened through Presidential Regulation No. 28 of 2021 on the National Cyber and Crypto Agency which provides a specific mandate in the protection of national cyberspace. The Ministry of Women's Empowerment and Child Protection (KPPPA) contributes to aspects of victim protection and prevention, especially related to child sexual exploitation on social media. This cooperation is formalized through the Joint Regulation on Child Protection in Digital Space.

The Indonesian Child Protection Commission (KPAI) is also actively involved in monitoring and advocacy related to content involving child exploitation. KPAI's role is regulated in Law No. 35/2014 on Child Protection. At the international level, Indonesia is active in cooperation with INTERPOL and other international law enforcement organizations to handle cross-border pornography cases. This cooperation is based on various international treaties that Indonesia has ratified[13]. This inter-agency coordination is facilitated through a special task force established under Presidential Regulation Number 44 of 2019 on the National Task Force for the Prevention and Handling of Negative Content on the Internet. The task force holds regular meetings and has a rapid response mechanism for handling urgent cases.

This research presents several aspects of significant novelty in the legal discourse of AI and cybercrime. First, this research is the first comprehensive study that specifically analyzes the implementation of AI technology in law enforcement of pornographic content on Twitter (X) in Indonesia after the transformation of the Ministry of Communication and Information into the Ministry of Communication and Digital. This institutional transformation brings a new paradigm in the approach to digital content regulation that has not been widely explored in the academic literature. This research introduces an integrative analysis model that connects three important dimensions in the implementation of AI for law enforcement:

technological, regulatory, and socio-cultural dimensions. This approach overcomes the limitations of previous research that tends to focus on technological or legal aspects separately without considering Indonesia's socio-cultural context. Furthermore, the research identifies specific challenges in implementing AI for content moderation in the Indonesian context, including the complexity of detecting locally modified content and the need to develop algorithms that are responsive to the nuances of Indonesian language and culture. These findings open new directions for further research on developing AI that is contextualized to national needs.

CONCLUSION

The implementation of Artificial Intelligence (AI) by the Ministry of Communications and Digital in law enforcement of pornographic content on Twitter (X) yields several important conclusions. First, the application of AI technology in digital content monitoring is a strategic response to the massive spread of pornographic content that requires fast and efficient handling. The AI system developed by Kominfo has shown a significant ability to detect and identify pornographic content with an accuracy rate of 85% for visual content and 75% for textual content. The implementation of the AI system uses a multi-layered approach that integrates computer vision and natural language processing (NLP) technologies. This approach enables comprehensive analysis of both visual and textual elements of digital content. The system works through an automated verification mechanism using a database of banned content, followed by manual review by a team of moderators for content that requires contextual assessment, and then coordination with Twitter for takedown. Despite its promising potential, the implementation of AI in pornographic content law enforcement still faces various challenges. These include technical aspects (high false positive rate, difficulty detecting modified content), operational aspects (cross-platform coordination, differences in moderation standards), and socio-cultural aspects (interpretation of content based on local cultural context, balance between user privacy and monitoring effectiveness). Data shows that of the total pornographic content detected, around 65% was successfully removed within 24 hours, while the rest required further verification processes.

A comprehensive legal and regulatory framework is in place to support the implementation of AI in handling pornographic content. Key regulations include Law No. 44/2008 on Pornography, Law No. 19/2016 on ITE, and Permenkominfo No. 5/2020 on Private Scope Electronic System Operator. This legal framework provides a strong foundation for Kominfo to develop and implement AI technology in digital content monitoring. The effectiveness of AI implementation is highly dependent on the collaboration of various related institutions. Collaboration between Kominfo and the Indonesian National Police, BSSN, KPPPA, KPAI, as well as international organizations such as INTERPOL is essential to address the complexity of pornographic content issues. This collaboration is facilitated through a special task force established under Presidential Regulation No. 44/2019. Based

on these findings, the study concludes that Kominfo's implementation of AI in law enforcement of pornographic content on Twitter represents a significant step forward in the effort to create a safer digital environment. However, implementation optimization is still needed through the development of more adaptive AI technology, strengthening coordination with social media platforms, and increasing the capacity of moderation teams. A comprehensive approach involving technological, regulatory, and socio-cultural aspects is the key to success in overcoming the challenges of pornographic content in the digital era. [*W*]

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