Privacy Concerns and Law Enforcement Data Collection to Tackle Domestic and Sexual Violence

Francesca Radice

Abstract—It has been observed that violent or coercive behaviour has been apparent from initial conversations on dating apps like Tinder. Child pornography, stalking, and coercive control are some criminal offences from dating apps, including women murdered after finding partners through Tinder. Police databases and predictive policing are novel approaches taken to prevent crime before harm is done. This research will investigate how police databases can be used in a privacy-preserving way to characterise users in terms of their potential for violent crime. Using the COPS database of NSW Police, we will explore how the past criminal record can be interpreted to yield a category of potential danger for each dating app user. It is up to the judgement of each subscriber on what degree of the potential danger they are prepared to enter into. Sentiment analysis is an area where research into natural language processing has made great progress over the last decade. This research will investigate how sentiment analysis can be used to interpret interchanges between dating app users to detect manipulative or coercive sentiments. These can be used to alert law enforcement if continued for a defined number of communications. One of the potential problems of this approach is the potential prejudice a categorisation can cause. Another drawback is the possibility of misinterpreting communications and involving law enforcement without reason. The approach will be thoroughly tested with cross-checks by human readers who verify both the level of danger predicted by the interpretation of the criminal record and the sentiment detected from personal messages. Even if only a few violent crimes can be prevented, the approach will have a tangible value for real people.

Keywords—Sentiment Analysis, data mining, predictive policing, virtual manipulation.

I. INTRODUCTION

SEXUAL and domestic violence are serious crimes that have devastating consequences for victims and their families [22]. They affect millions of people each year and can happen to anyone, regardless of their gender, age, race, or socioeconomic status [22]. Sexual and domestic violence have numerous long-lasting effects on victims, including physical injuries, emotional trauma, and financial insecurity. Victims of sexual violence can suffer from post-traumatic stress disorder (PTSD), anxiety, depression, and other mental health issues [8], and dating apps are increasing the possibility of these consequences because meeting partners happens rather quick, due to online networks [30]. The consequences of sexual and domestic violence are not limited to the individual victims. They can also affect entire communities in real life and in the virtual space. Domestic violence and sexual violence can break down families and communities, leading to distrust, fear, and social isolation. Solitude feeds the need to find partners online when in the privacy of the home. Victims feel safer in their own habitat, yet they are still vulnerable toward this type of violence [30].

This research aims to educate individuals when using dating app, and promote healthy relationships, non-violence, and supporting victims by providing sound warnings of coercive control leading to domestic and sexual violence. The aim is to achieve this by using police managed data and text messages between users, that shows the dangers of domestic and sexual violent behaviours. In recent years, dating apps have become a popular way for people to meet and connect with others [31]. 83% of people meet online and most people use these apps to form healthy and happy relationships [9]. However, there is a darker side to their use. Unfortunately, dating apps have also been used as a tool for domestic and sexual violence, especially at the initial stages. Behaviours such as continuous messaging, tracking a person's location and asking inappropriate personal and evasive questions are some signs worth monitoring within the dating app community [20]. Dating apps can be appealing to perpetrators of violence as they allow them to hide their true identity, making it easier for them to target vulnerable individuals. Predators often use false information and photographs to portray themselves as someone else, making it difficult for victims to identify them as a potential danger. Sexual predators and abusers can use fake profiles to lure victims into situations where they are unsafe, and they can use the messaging feature to manipulate and control them [17]. The direction this research will take is identifying dating app users for who they really are by validating individuals and then providing a risk measurement using Computerised Operational Policing Systems (COPS) data. COPS data will provide categories such as Domestic Violence (DV), Sexual Violence (SV) or Apprehensive Violence Order (AVO) as attributes to be used for risk analysis in dating apps. Furthermore, the detection and intervention of sexual and domestic violence from text with Natural Language Processing (NLP) also known as Sentiment analysis [9] could reveal coercive control, violent behaviours and sexual and domestic violence possibilities, at the initial stages of interaction.

The paper begins by explaining the domestic and sexual violence problems in couples. The second section focuses on current developments and how this research will address community problems and a series of research questions. The next section will detail the expected benefits and proposed approaches for each. The study will then provide police database knowledge and predictive policing intelligence

Francesca Radice is with NSW Police Forse, Australia (e-mail: radi1fra@police.nsw.gov.au).

World Academy of Science, Engineering and Technology
International Journal of Social and Business Sciences
Vol:18, No:3, 2024

potentials used in a privacy-preserving way without prejudice. The final section will present conclusions and research timeline, showing research tasks.

II. BACKGROUND

Partner Sexual and Domestic Violence

Domestic and sexual violence is a pervasive issue in many couples. It is also known as Intimate Partner Violence (IPV) [37]. It is a form of abuse that can happen to anyone in an intimate relationship or family setting. The effects of this type of violence can be long-lasting, causing physical and emotional harm to the victim. Domestic and sexual violence can take many forms, including physical assault, emotional abuse, sexual assault, and financial abuse, and this happens with the people closest to them. It is more common in women because the Australian Bureau of Statics shows 1 in 6 women experiencing domestic and sexual violence compared to 1 in 16 men before the age of 15 [7].

Emotional and financial abuse is often overlooked but can be as damaging as physical abuse. Emotional abuse involves using words or actions to manipulate or control someone, while financial abuse involves controlling someone's access to money or property. Emotional or financial abuse victims may experience anxiety, depression, and a loss of self-worth [2]. Capturing such behaviours for police intelligence creates new data that can help monitor cruel and illegal behaviours by substituting human judgement and applying Sentiment Analysis to text [23]. This form of law enforcement shifts away from traditional policing methods of governing [40], captures a new unorthodox approach that is quicker and preventative with less physical deployment of police. This dataset can be managed by law enforcement but not directly identified by law enforcement by allowing "Big Data" to provide insights born from the data [40] to lead investigations. Cross-checks by human readers will verify the level of danger and re-interpret what is found before police action takes place. Behaviours such as bullying, harassment, threats and swearing are text chat interactions that can be managed by police using neural networks [41] or text-based language processing models [24] showing inappropriate behaviours.

Dating Apps

Dating apps can be used to facilitate abuse and violence in existing relationships. It is not uncommon for an abusive partner to monitor the other's phone use or install tracking software that allows them to track the individual's movements and interactions with others [38]. This can give the abuser greater control over the other person, making it more difficult for them to escape the abusive relationship and meet new people online.

To prevent domestic and sexual violence through dating apps, dating companies must take several measures. Firstly, they must be vigilant in monitoring and responding to reports of abuse and violence with technology to assist [36]. They should provide clear guidelines on how to report such incidents and have appropriate procedures in place to deal with them. This includes removing fake profiles and banning users who have violated their terms of use.

Dating app companies should invest in technology that helps to prevent abuse. For example, they can use image recognition technology to detect fake profiles, and they can also provide greater transparency into the identity of their app users [32] by incorporating driver licence number or credit card to identify them.

Dating apps users should also take personal responsibility for their online safety. This includes avoiding giving out personal information to strangers and being cautious about meeting new people in real life. Having said that, people continuously demonstrate vulnerable behaviour and put themselves in difficult unsafe positions and meet up with people they barely know [35]. They should also report any incidents of abuse or violence to the appropriate authorities and dating companies, yet people as users are neglecting to do so [29].

Dating apps have their benefits, but they are also a potential source of danger and abuse. To prevent domestic and sexual violence, we must take a collective approach involving dating companies, users, and law enforcement agencies. By working together, we can create a safer online dating environment and a safer world for everyone.

Current Developments and Community Problems

Domestic and sexual violence remain significant community problems that continue to affect individuals and society adversely. Despite efforts to address the issue, ongoing challenges and developments in this area require attention. Current developments and community problems with sexual and domestic violence are the digitisation of ongoing issues [19] creating an additional layer of domestic and sexual violence needing channelled attention.

Increased reports during COVID-19 pandemic have led to a surge in domestic and sexual violence reporting due to the pressure of isolation, financial stress, and other factors resulting from the pandemic. Stay-at-home orders, social distancing, and lost jobs exacerbate already tense family dynamics, contributing to incidents of violence [6]. Under reporting domestic and sexual violence is a critical issue affecting community response to the problem. Victims are often reluctant to report their cases due to fear of reprisals, shame, lack of trust in the legal system, or inadequate access to support services [25]. This means that the true extent of the problem may not be reflected in official statistics. The lack of reporting should give reason towards an improved online analysis that keeps people safer from harm. Advancements in technology and online abuse platforms continue to present new challenges in addressing domestic and sexual violence. Abusers can use social media platforms, dating apps, and other technology to harass, stalk, and intimidate their victims, making it difficult to escape the abuse [20], even in the vicinity of their own homes. This type of online abuse is often under-reported and can be challenging to investigate, making it critical to develop technological solutions to detect and prevent such abuse. Reference [31] discusses the difficulties in

World Academy of Science, Engineering and Technology
International Journal of Social and Business Sciences
Vol:18, No:3, 2024

policing technology, and [12] explains how technology contributes to domestic and sexual violence. Reference [12] also analyses how technology facilitates coercive control.

Intersectionality and disproportionate harm among marginalised groups have increased the challenges of domestic and sexual violence. There is a disproportionate effect within the community for indigenous women, LGBTQ+ communities, and individuals with disabilities [17]. Recognising the intersections of oppression many victims experience and addressing these communities aligned with unique challenges as individual assignments is essential. Challenges in holding perpetrators accountable for domestic and sexual violence remains a significant challenge for the legal system. Prosecution rates remain low, and offenders are often not adequately convicted [21]. This can create a perception that the perpetrator is not held accountable, and this deters victims from reporting similar crimes. Domestic and sexual violence continue to pose significant challenges to individuals and communities. Addressing the issue requires a comprehensive approach that includes increasing awareness, providing support to victims, and implementing policies that address the underlying causes of the problem, such as how couples meet in dating apps. It is critical to monitor current developments and community problems with domestic and sexual violence alongside dating apps.

III. RESEARCH QUESTIONS

1. Using COPS data involves standardising the variables and formats ready and available in different data sets to enable easier integration and comparison. How can standardising COPS variables determine the weighting of different items relating to a users criminal history and the amount of time between activities to provide a risk value against potential partners in dating apps?
2. What risk assessment methods can create a warning system that safeguards dating app users and prevents them from encountering sexual and domestic violence offenders?
3. How can data be used to ensure privacy as a human right when retrieving dating app behavioural observations curated for police intelligence and community safety?

IV. PROPOSED RESEARCH METHOD

The research contribution has two distinct aspects; on the one hand, a method to warn participants of dangerous individuals is devised based on police COPS data.

The other aspect of the contribution is the identification and classification of abusive/coercive intent from message text. This includes coercive control, bullying, sexual and physical assault, child sex offences, domestic and sexual violence and grievous bodily harm.

By using a quantitative approach and standardising COPS data variables like location or object such as a car, the aim is to demonstrate a structure of risk results taken from crime categories such as DV, SV, AVO and Child sex offences.

Using those variables will demonstrate potential sexual and domestic violators pretending to be sincere and honest users.

A mixed methods approach that combines two different data sets that include the personal information of dating app users and police narratives with the COPS data. These two separate data sets provide an integrated approach toward community safety. The first part will develop law enforcement data to provide risk results served as warnings to dating app users. The second part will obtain dating app text communication to show coercive control and sexual and domestic violent characteristics with sentiment analysis.

Benefits

Tackling the problems of sexual and domestic violence can have numerous benefits for individuals and communities. Domestic and sexual violence can cause trauma and physical harm, leading to long-term physical and emotional health issues [3]. Intervention strategies using dating apps will give healthy minded people the opportunity to meet other healthy minded people with genuine values, need a genuine alike partner. Domestic and sexual violence can have ripple effects beyond the individuals involved, leading to increased crime rates, fear among the wider community [26] or homelessness. By addressing these issues, communities can be protected and more supportive of victims of violence [18].

Another benefit will be reduced economic costs towards domestic and sexual violence cases. Over 20 billion dollars was spent on domestic and sexual violence between 2021 and 2022 [27]. This means there are significant costs, lost productivity, health care expenses, and other related costs to domestic and sexual violence victims. Addressing these issues can lead to lower domestic and sexual violence expenditures for individuals and state governments.

Improved gender equality can be a benefit for tackling the problems of sexual and domestic violence. Violence against women is a significant barrier to gender equality. In the year 2015, 2800 women were hospitalised for domestic and sexual violence compared to only 560 men [21]. Addressing domestic and sexual violence can help to break down these barriers and promote gender equality. Changing systems can also lead to an increase in trust in public institutions that could help individuals. Failure to address domestic and sexual violence can lead to mistrust in public institutions such as the police and courts. Addressing these issues can help to rebuild trust and confidence in these institutions [33]. Another key benefit will be improved criminal justice outcomes by holding perpetrators accountable for domestic and sexual abuse, by using text as evidence for crimes. Having tangible evidence drawn from dating apps will improve criminal justice outcomes because more proof can be presented in court. Offenders can be punished for crimes, and victims can receive justice and closure. Today many offenders are not convicted causing new victims not to report violence [15].

Stronger social cohesion toward domestic and sexual violence can also lead to stronger societies. Communities that work together to tackle these problems can become more cohesive and supportive, leading to improved quality of life

World Academy of Science, Engineering and Technology
International Journal of Social and Business Sciences
Vol:18, No:3, 2024

for all community members. Addressing the problems of sexual and domestic violence can have significant benefits for individuals, government and the general public. Addressing these issues requires a comprehensive and collaborative approach involving education, awareness-raising, and rigorous law enforcement efforts providing text-based behaviour oversight. By working together, we can create safer, more supportive community that uphold all individuals' dignity and human rights. Early intervention in the form of warnings; the likelihood of a significant number of dating app users avoiding contact with people categorised as dangerous will be sound mediation for partnering people with honest profiles. Early knowledge management in the form of alerting law enforcement on dangerous conversations will direct investigations be time and resource effective. The Working With Children Check (WWC) and National Police Checking System (NPCS) are both precautions taken by employers for the purpose of lowering the risk of future complications within the workplace. The risk awareness delivered to dating app users and law enforcement performs a similar task. Employers can choose to hire a person with a criminal record if they like. However, a decision is based on information about the person, not a risky guess, based on photo appearance. Providing risk results for dating app users and domestic and sexual violence character traits to law enforcement will keep people safe using two forms of detection.

Police Databases, Predictive Policing and Privacy

Police databases, predictive policing, and privacy are intertwined, and their interactions raise ethical, social, and legal issues but can be overcome if new strategies are adopted for community safety. Today police databases and law enforcement agencies rely on databases to store and manage massive amounts of information about crime, victims, and suspects. While databases can be valuable tools for solving crime, they also raise issues around data protection, personal information use, and data quality. There is a risk that the data can be hacked, stolen, or misused, and there is a need for stringent protocols to ensure the accuracy of the data. Computerised Operational Policing System (COPS) is the NSWPF database and crime information system that is over twenty years old [14]. The software heavily used across law enforcement police agencies would benefit from a changed data representation or a homogenised [5] data asset that supports operational police and the community. The data that could be used from COPS support the exchange of objects that could provide adequate online warnings to dating app users about potential sexual and domestic violators. COPS data could be used for the purpose of providing risk assessments delivered to the community through dating apps. Legacy systems are often designed to work with data that are stored in a specific format. It can be difficult to convert the data into a format the legacy system can accept and exchange. The aim is to improve police data so that an improved information transfer, with more useful, usable and consistent information delivery, across different system types [14] contributes to a safer community and better use of public government data.

Predictive policing is an approach that uses data analysis and machine learning to predict and prevent crime. This approach is based on the analysis of historical crime data, which raises concerns about bias, discrimination, and over-reliance on historical data. Predictive policing algorithms may be based on biased data, such as racially biased arrest records, which can perpetuate discrimination and undermine trust between law enforcement and the community. Predictive policing is an approach to law enforcement that allows police to predict which individuals are likely to commit crimes in the future using data analysis. This information is often used to target these individuals with preventive interventions such as targeted police patrols or social media monitoring [1]. Critics of predictive policing argue that these are breaches of an individual's privacy rights because it allows the government to monitor activities without a warrant. They argue that this information can be used to unfairly target minority groups or individuals with political options that police disagree with [16]. Predictive policing may also be controversial because it could increase police raids and mass arrests. This may be especially contentious in areas with a history of police brutality [11]. Barrett [4] states that in California City, predictive policing algorithms have been banned due to racial disparities. Therefore, alternatives are needed for online interactions and data transfer. Protecting personal and private information but delivering a warning about a dating app person concerning domestic violence (DV), sexual violence (SV) or an apprehensive violence order (AVO) tied to them. The COPS information will then provide a risk measurement shown in the dating app, specifically about the person the user intends to court [33]. Another example is Third Generation (3G) risk assessment incorporating dynamic risk factors known as criminogenic needs for re-offending [10]. There are many risk assessment tools that can be copied for dating app risk measurement. If the interested party has minor parking or speeding infringements, their risk level will be rather low. The risk measurement will be high or extreme if a person has DV, SV, and AVO taxonomies. The objective is to show a risk assessment, allowing dating app users to predict dating outcomes, to improve date selections because it will be based on the risk measurement received. Risk analysis from a trusted third party, such as state law enforcement, improves decision-making for users because it delivers people transparency. The individual then makes a collaborative decision based on an informed government-managed data set.

Privacy concerns relating to police databases and predictive policing also raise issues around data integrity and what law enforcement is legally obliged to do under the human rights legislation. The collection and use of personal data have significant implications for individual privacy, and there is a need for proper safeguards to protect such information. The use of surveillance technologies, facial recognition software, and other forms of surveillance can jeopardise privacy rights and raise concerns about data protection and surveillance. Law enforcement agencies are responsible for protecting citizens and serving their interests. However, they are often faced with conflicting interests that complicate their objectives. Civil

World Academy of Science, Engineering and Technology
International Journal of Social and Business Sciences
Vol:18, No:3, 2024

rights and privacy laws design what can be observed online and for what reason. The US criminal justice system uses data-driven risk assessment tools when deciding where to deploy police officers [13]. Observing online interaction in dating apps demonstrates similar processes with increased productivity for virtual appointments, specifically for sexual and domestic violence. Data security tools can help mitigate the risk of getting hacked or personal information being released about survivors. But simultaneously, government police organisations also have an obligation to protect the general public on and offline. The Domestic Violence Suspect Target Management Plan (DV-STMP) [39] relates risk evaluation to consequence and defines incarceration or deterrence as important elements to reduce crime risk. Boston Operation Ceasefire (BOC) involved police, youth workers, and probation and parole officers in communicating to gang members that crime will not be tolerated [39]. Dating app users being made aware of their possible misconduct monitoring may reduce sexual and domestic crime risks simply because they are targeted. An immediate response toward coercive and controlling behaviours or violent online misbehaviour may deter unlawful misconduct, such as unwanted sexting or online stalking.

Behavioural data monitoring in dating apps should not override data security. Data leaks showing the personal information about users to respective sexual and domestic violence partners challenge the DV-STMP due to privacy unfairness if potential security threats are not mitigated. The OPTUS 2022 data breach revealed the personal information about users [34] including the location of domestic and sexual violence victims. Those assaulted have purposely hidden their location from perpetrators because of safety concerns. CTITF Working Group has several research streams, such as, 'Protecting Human Rights While Countering Terrorism' [29]. The work conducted produces web-based strategies that strengthen the protection of vulnerable targets with public-private partnerships contributing to criminal and terrorist acts such as chemical and nuclear advances leading to war. Having a similar approach toward sexual and domestic violence locally with COPS data and dating app behavioural monitoring yet protecting human rights is a current CTITF aim that this research looks to adhere to [28]. Data security laws and regulations must be increasingly strengthened to protect the privacy of domestic and sexual violence survivors and those at high risk of using dating apps. Data breaches can impact domestic and sexual violence by increasing the risk of harassment, stalking and online bullying. Therefore, policing online interactions through dating apps and applying risk measurements to users will increase data security and have ongoing law enforcement protection.
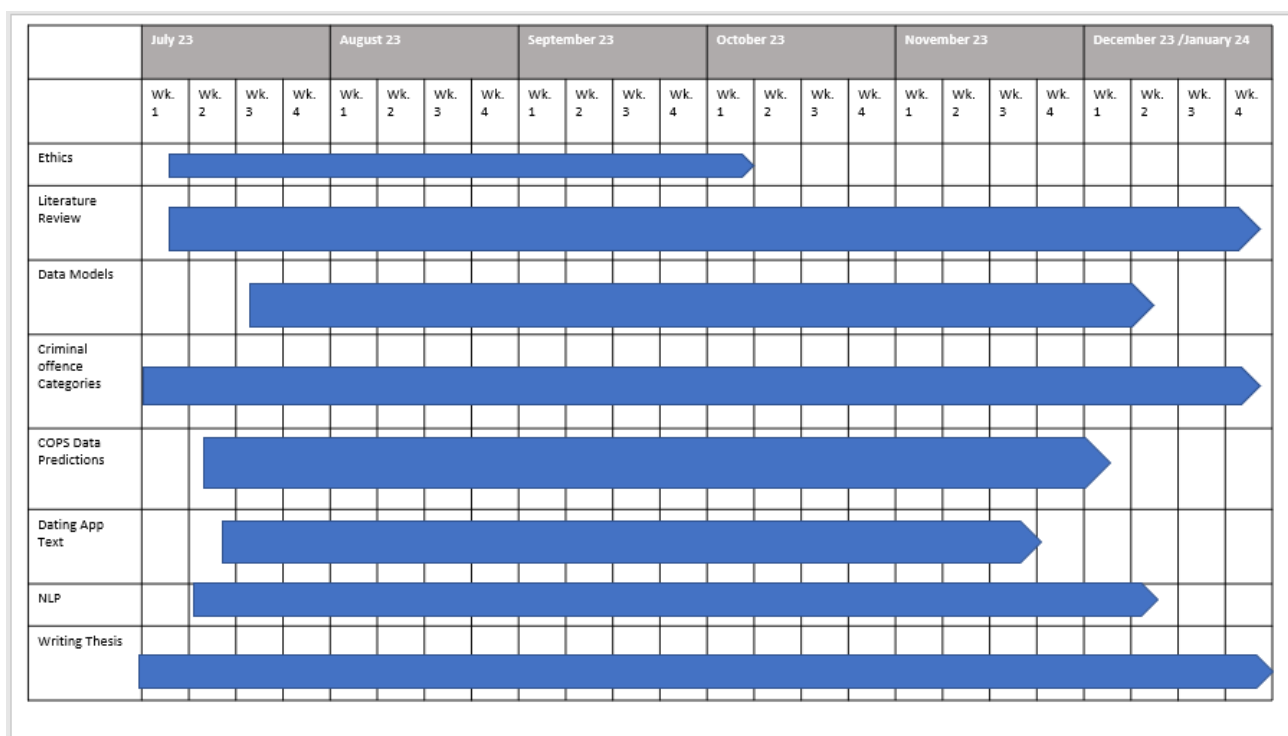

Fig. 1 Work to be completed by the CoC review

To address these issues, there is a need for adequate regulations, policies, and transparency about police databases and the use of predictive policing for risk easements. Law enforcement agencies must ensure that adequate protections are in place to safeguard human privacy, and they must be transparent about how data is collected, stored, and used. Additionally, there must be adequate protocols to address the biases and potential discrimination in the use of predictive policing algorithms. Education of law enforcement personnel and the public about these issues is also crucial for upholding

World Academy of Science, Engineering and Technology
International Journal of Social and Business Sciences
Vol:18, No:3, 2024

transparency and accountability in the use of police databases, predictive policing and risk assessments.

V. Conclusion

This research project is based on reading materials about domestic and sexual violence. The aim is to understand the data categories relating to violence that has been grouped with domestic, sexual, grievous bodily harm and murder information assets for the purpose of providing risk analysis. Dating app users are found in a highly fortuitous way leading to extreme randomness and searching for partners blind sighted. Privacy concerns involving law enforcement data collection can provide domestic and sexual violence safety within communities by having security parameters applied when collecting COPS data for risk assessment. The implementation of sentiment analysis and NLP with text messages in dating apps allows for DV, SV and AVO predictions, be delivered to law enforcement for further management.

References

[1] Geir Aas. Fieldwork in police studies–the ethical dilemma in participatory observation with police patrols. *Police Practice and Research*, 22(1):835–848, 2021.

[2] Zohre Ahmadabadi, Jackob M Najman, Gail M Williams, and Alexandra M Clavarino. Income, gender, and forms of intimate partner violence. *Journal of interpersonal violence*, 35(23-24):5500–5525, 2020.

[3] Kavita Alejo. Long-term physical and mental health effects of domestic violence. *Themis: Research Journal of Justice Studies and Forensic Science*, 2(1):5, 2014.

[4] Lindsey Barrett. Reasonably suspicious algorithms: predictive policing at the United States border. *NYU Rev. L. & Soc. Change*, 41:327, 2017.

[5] Danielle Boulanger and Gilles Dubois. An object approach for information system cooperation. *Information Systems*, 23(6):383–399, 1998.

[6] Hayley Boxall, Anthony Morgan, and Rick Brown. The prevalence of domestic violence among women during the covid-19 pandemic. *Australasian Policing*, 12(3):38–46, 2020.

[7] Carolyn Briggs. An emerging trend in domestic violence: Technology-facilitated abuse. *Australian Journal of Child and Family Health Nursing*, 15(1):2, 2018.

[8] Axel C Carlsson, Ulrika Owen, and Gita Rajan. Sexual violence, mental health, and suicidality—results from a survey in cooperation with idea-driven organizations and their social media platform followers. *Health science reports*, 6(1):e973, 2023.

[9] Jireh Yi-Le Chan, Khean Thye Bea, Steven Mun Hong Leow, Seuk Wai Phoong, and Wai Khuen Cheng. State of the art: a review of sentiment analysis based on sequential transfer learning. *Artificial Intelligence Review*, 56(1):749–780, 2023.

[10] Eleftherios Chelioudakis. Risk assessment tools in criminal justice: Is there a need for such tools in Europe and would their use comply with European data protection law? *ANU Journal of Law and Technology*, 2020.

[11] Hannah LF Cooper. War on drugs policing and police brutality. *Substance use & misuse*, 50(8-9):1188–1194, 2015.

[12] Heather Douglas, Bridget A Harris, and Molly Dragiewicz. Technology-facilitated domestic and family violence: Women's experiences. *The British Journal of Criminology*, 59(3):551–570, 2019.

[13] Laurel Eckhouse, Kristian Lum, Cynthia Conti-Cook, and Julie Ciccolini. Layers of bias: A unified approach for understanding problems with risk assessment. *Criminal Justice and Behavior*, 46(2):185–209, 2019.

[14] Mike Enders and Lily Enders. Cops, computers and the right to privacy in the information age: unauthorised access and inappropriate disclosure of information complaints in New South Wales. *AJIS: Australian journal of information systems*, 8(2), 2001. ISSN 1449-8618.

[15] Claudia García-Moreno, Christina Pallitto, Karen Devries, Heidi Stöckl, Charlotte Watts, and Naeema Abrahams. *Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence*. World Health Organization, 2013.

[16] Carlo Gatti et al. Policing the poor through space: The fil rouge from criminal cartography to geospatial predictive policing. *Oñati Socio-Legal Series*, 12(6):1733–1758, 2022.

[17] Ateret Gewirtz-Meydan, Denise Volman-Pampanel, Eugenia Opuda, and Noam Tarshish. Dating apps: a new emerging platform for sexual harassment? a scoping review. *Trauma, Violence, & Abuse*, page 15248380231162969, 2023.

[18] Lisa A Goodman, Mary Ann Dutton, and Maxine Harris. Episodically homeless women with serious mental illness: Prevalence of physical and sexual assault. *American Journal of Orthopsychiatry*, 65(4):468–478, 1995.

[19] Nicola Henry and Anastasia Powell. Sexual violence in the digital age: The scope and limits of criminal law. *Social & legal studies*, 25(4):397–418, 2016.

[20] Nicola Henry, Asher Flynn, and Anastasia Powell. Technology-facilitated domestic and sexual violence: A review. *Violence Against Women*, 26 (15-16):1828–1854, 2020.

[21] Ann Hunt, Karen Webber, Jennaya Montgomery, and Amy Duong. *Family, domestic and sexual violence in Australia 2018*. Australian Institute of Health and Welfare, 2018.

[22] Neetu John, Sara E Casey, Giselle Carino, and Terry McGovern. Lessons never learned: crisis and gender-based violence. *Developing world bioethics*, 20(2):65–68, 2020.

[23] Archa Joshy and Sumod Sundar. Analyzing the performance of sentiment analysis using Bert, Distilbert, and Roberta. In *2022 IEEE International Power and Renewable Energy Conference (IPRECON)*, pages 1–6. IEEE, 2022.

[24] Usman Naseem, Imran Razzak, Shah Khalid Khan, and Mukesh Prasad. A comprehensive survey on word representation models: From classical to state-of-the-art word representation language models. *Transactions on Asian and Low-Resource Language Information Processing*, 20(5):1–35, 2021.

[25] Katalin Parti, Robin A Robinson, David Kohlmann, Enikö Virágh, and Dóra Varga-Sabján. Beyond obstacles: toward justice for victims of sexual violence in Hungary. A literature review. *Trauma, Violence, & Abuse*, 24(1): 203–217, 2023.

[26] Dean Peacock. Moving beyond a reliance on criminal legal strategies to address the root causes of domestic and sexual violence. *Violence against women*, 28(8):1890–1907, 2022.

[27] Janet Phillips and Penny Vandenbroek. Domestic, family and sexual violence in Australia: an overview of the issues. 2014.

[28] Focal Points. United nations interregional crime and justice research institute (unicri).

[29] Kamarah Pooley and Hayley Boxall. Mobile dating applications and sexual and violent offending. *Trends and Issues in Crime and Criminal Justice (electronic resource)*, (612):1–16, 2020.

[30] Gina Potarca. The demography of swiping right. an overview of couples who met through dating apps in Switzerland. *PLoS One*, 15(12):e0243733, 2020.

[31] Anastasia Powell and Nicola Henry. Policing technology-facilitated sexual violence against adult victims: Police and service sector perspectives. *Policing and Society*, 28(3):291–307, 2018.

[32] Ethel Quayle. Prevention, disruption and deterrence of online child sexual exploitation and abuse. In *Era Forum*, volume 21, pages 429–447. Springer, 2020.

[33] Vicki Sentas and Camilla Pandolfini. *Policing young people in NSW: A study of the suspect targeting management plan*. Youth Justice Coalition, 2017.

[34] Pritam Gajkumar Shah. Optus data breach Australia year 2022–case study. *Australian Journal of Wireless Technologies, Mobility and Security*, 1, 2022.

[35] Jemimah Steinfeld. Forced out of the closet: As people live out more of their lives online right now, our report highlights how LGBTQ dating apps can put people's lives at risk. *Index on Censorship*, 49(2):101–104, 2020.

[36] Heather L Storer, Maria Rodriguez, and Roxanne Franklin. "Leaving was a process, not an event": The lived experience of dating and domestic violence in 140 characters. *Journal of interpersonal violence*, 36(11-12): NP6553–NP6580, 2021.

[37] Federica Taccini and Stefania Mannarini. An attempt to conceptualize the phenomenon of stigma toward intimate partner violence survivors: a

World Academy of Science, Engineering and Technology
International Journal of Social and Business Sciences
Vol:18, No:3, 2024

systematic review. *Behavioral Sciences*, 13(3):194, 2023.

[38] Laura Vitis. Surveillant assemblage: Overt, covert, movement and social surveillance in domestic and family violence in Singapore. In *Women's Studies International Forum*, volume 96, page 102664. Elsevier, 2023.

[39] Steve Yeong et al. An evaluation of the suspect target management plan. *Crime and Justice Bulletin*, 2020.

[40] Aleš Završnik. *Big data, crime and social control*. Routledge, 2017.

[41] Mai Zhu, Bo Chang, and Chong Fu. Convolutional neural networks combined with runge–kutta methods. *Neural Computing and Applications*, 35(2): 1629–1643, 2023.