**AI-Driven Solutions for Sexual Violence Prevention: The Serenova Initiative**

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**Abstract**

This paper discusses the findings of a study exploring the role of technology-driven solutions in addressing the pervasive issue of sexual violence and supporting survivors. The study investigates how Serenova, a community-driven platform leveraging AI, real-time data, and crowdsourcing, empowers users to navigate safely and fosters a supportive environment for survivors. Data were collected through semi-structured interviews with 20 participants, including women, survivors, and community volunteers, and analysed using qualitative and quantitative methods. The results reveal that Serenova enhances user safety through features like AI-powered route planning and real-time harassment reporting, while also providing a safe space for survivors to share stories and access resources. Participants highlighted the platform’s ability to adapt to individual needs, promote community engagement, and address gender-based violence effectively. However, challenges such as data accuracy and user privacy were also identified. The study underscores the potential of technology for social good in creating safer spaces and supporting survivors of sexual violence.

**Keywords**: Sexual violence, AI-powered solutions, real-time data, survivor support, community engagement, gender-based violence, technology for social good.

1. **Introduction**

Sexual violence, a pervasive and deeply rooted issue, continues to have a profound societal impact, particularly in regions like India where women and vulnerable individuals face significant risks in public spaces (UN Women, 2020). Despite increased awareness and efforts to address this problem, existing solutions often fall short in providing real-time safety measures and holistic support for survivors. This gap highlights the urgent need for innovative, technology-driven approaches that empower individuals and communities to combat sexual violence effectively. In recent years, artificial intelligence (AI) and real-time data analytics have generated considerable interest among researchers and practitioners for their potential to address complex social challenges (Kumar & Singh, 2018). These technologies offer opportunities for personalized safety solutions, real-time incident reporting, and community-driven support systems, making them invaluable tools in the fight against sexual violence. However, as noted by Heilig (2012), the integration of technology into social initiatives requires careful alignment with the needs of end-users, the contexts in which they operate, and the ethical considerations surrounding data privacy and security. This underscores the importance of designing solutions that are not only effective but also inclusive and sustainable.

Serenova, a community-driven platform leveraging AI, real-time data, and crowdsourcing, emerges as a novel solution to address these challenges. By combining AI-powered route planning, real-time harassment reporting, and a supportive space for survivors, Serenova aims to create safer environments and empower individuals to navigate their daily lives with confidence. The platform also fosters community engagement by enabling users to contribute to safety initiatives and access educational resources on gender equality and self-defence. Taking into consideration the above-mentioned issues, the study reported in this article investigates the role of Serenova in addressing sexual violence and supporting survivors. The article commences with a short overview of relevant literature, followed by a description of the study’s design, including the research questions, participant profiles, data collection tools, and analysis methods. This is followed by the presentation of the results of the study, highlighting the platform’s impact on user safety, survivor support, and community engagement. The article closes with a discussion of the findings and their implications for future research and practice.

1. **Literature Review**
   1. Sexual Violence Prevention

Sexual violence is a global public health and human rights concern, requiring evidence-based prevention strategies to reduce its occurrence. Research suggests that prevention efforts must be multi-layered, incorporating individual, community, and systemic interventions (Basile et al., 2016). The Centres for Disease Control and Prevention (CDC) emphasizes the importance of primary prevention, which involves stopping violence before it occurs through education, policy changes, and social norm shifts (CDC, 2021). One widely studied approach is bystander intervention training, which encourages individuals to recognize and intervene in potentially harmful situations (Banyard, Moynihan, & Plante, 2007). Programs such as "Bringing in the Bystander" and "Green Dot" have demonstrated effectiveness in changing attitudes and increasing proactive behaviours (Coker et al., 2011). Another strategy is comprehensive sex education, which includes discussions on consent, healthy relationships, and recognizing coercion. Studies indicate that students who receive such education are more likely to respect boundaries and understand the consequences of non-consensual behaviour (Kohli et al., 2019). Additionally, environmental and policy-based interventions play a crucial role in prevention. Research shows that improved lighting in public spaces, security measures in nightlife settings, and campus policies mandating consent training contribute to reduced incidences of sexual violence (Gidycz et al., 2011). Legislative measures, such as affirmative consent laws (e.g., "Yes Means Yes" laws), have also been linked to increased awareness and lower rates of sexual assault (Schneider & Dimyadi, 2017).

* 1. Survivor Support Systems

Survivors of sexual violence require extensive support systems that address their psychological, legal, and medical needs. Research underscores the importance of trauma-informed care, which focuses on minimizing re-traumatization and empowering survivors (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). Trauma-informed practices have been integrated into healthcare, law enforcement, and advocacy services to improve survivor outcomes (Campbell, 2006). Mental health services are crucial in addressing post-traumatic stress disorder (PTSD), depression, and anxiety, which are common among survivors. Evidence-based therapies such as cognitive-behavioural therapy (CBT) and eye movement desensitization and reprocessing (EMDR) have shown effectiveness in reducing PTSD symptoms and improving overall well-being (Resick et al., 2008). Additionally, peer support programs and survivor advocacy groups, such as RAINN (Rape, Abuse & Incest National Network), offer emotional support and resources (RAINN, 2022). Legal support systems, including sexual assault nurse examiner (SANE) programs, have been shown to improve legal outcomes for survivors by providing forensic examinations and testimony in court cases (Campbell, Patterson, & Lichty, 2005). Title IX offices on college campuses play a significant role in offering survivors accommodations and guiding them through reporting processes (Holland & Cortina, 2017). Moreover, community-based organizations provide legal assistance and crisis counselling, often collaborating with law enforcement and healthcare providers (MCASA, 2023).

* 1. Use of AI and Technology in Sexual Violence Prevention and Support

The integration of artificial intelligence (AI) and digital technologies has significantly enhanced efforts in both preventing sexual violence and supporting survivors. AI-driven tools are now being used for predictive analytics, early intervention, and victim assistance (Bailey & West, 2019). One major application of AI is machine learning-based risk assessment tools, which analyse large datasets to identify patterns and predict high-risk situations (Tompsett et al., 2017). Law enforcement agencies use AI-powered crime mapping to allocate resources effectively and anticipate potential incidents (Chainey & Ratcliffe, 2013). Additionally, natural language processing (NLP) is employed in online platforms to detect and flag predatory behaviour, particularly on social media and dating apps (Hansson et al., 2021). For survivor support, AI-powered chatbots like "Sophia" by The Trevor Project provide confidential, real-time assistance for individuals in distress (Trevor Project, 2022). Other applications include mobile safety apps such as "Circle of 6" and "bSafe," which allow users to send emergency alerts and share their locations with trusted contacts (Wang et al., 2020). Moreover, blockchain technology has been explored for secure evidence storage in sexual assault cases, ensuring tamper-proof documentation (Griggs et al., 2018). However, despite the potential of AI in addressing sexual violence, ethical concerns remain. Issues such as data privacy, bias in algorithms, and the potential for misuse of surveillance technologies must be carefully managed (Whittaker et al., 2021). Researchers emphasize the need for interdisciplinary collaboration between technologists, policymakers, and victim advocacy groups to ensure AI tools are implemented responsibly (Burris & Welsh, 2020).

* 1. Challenges and Future Directions

While significant progress has been made in sexual violence prevention, survivor support, and the use of AI in addressing these issues, challenges persist. Underreporting remains a major barrier, as many survivors fear stigma, disbelief, or retaliation (Chen & Ullman, 2010). Additionally, disparities in access to resources disproportionately affect marginalized communities, including LGBTQ+ individuals and people of color (Cantor et al., 2020). Future research should focus on expanding culturally competent interventions, improving AI-driven predictive models, and enhancing survivor-centred policies. Strengthening partnerships between academic institutions, law enforcement, and survivor advocacy organizations will be essential in advancing these efforts.