



A Survey Paper on Mahila Suraksha Nyayavani: Crime Reporting Website

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Abstract: Ensuring the safety of women has become an urgent issue in contemporary society, as instances of harassment, abuse, and violence continue to appear in both physical and virtual spaces. Despite increasing awareness and evolving legal frameworks, many cases remain unreported due to fear, embarrassment, or a lack of accessible and reliable support systems. Mahila Suraksha Nyayavani is an intelligent web-based application developed to provide a secure and confidential environment for women to report incidents safely.

The system incorporates a Natural Language Processing (NLP) model built on BERT (Bidirectional Encoder Representations from Transformers) to automatically interpret and classify reports based on their level of urgency and potential risk. Critical cases are prioritized for faster response and intervention by concerned authorities. In addition to its reporting function, the platform emphasizes awareness and empowerment through categorized articles, self-defense tutorials, and real-life case studies.

It also includes a chatbot interface that provides instant assistance, step-by-step guidance, and legal information. By integrating AI-based risk evaluation, digital awareness, and institutional collaboration, Mahila Suraksha Nyayavani acts as a holistic safety and education platform, strengthening both prevention and response mechanisms for women's security.

Keywords: Women Safety, Crime Reporting, NLP, Sentiment Analysis, Deep Learning, BERT, Risk Prediction, Web Application.

I. INTRODUCTION

Women's safety has become a critical global concern as incidents of harassment, abuse, and violence continue to occur in both digital and physical environments [1][9]. Despite numerous awareness initiatives and legal measures, many victims hesitate to report such cases due to social pressure, fear of judgment, or limited access to reliable assistance [8][23]. This lack of timely reporting often prevents effective intervention and justice, leaving women exposed to recurring risks and emotional distress [3][9].

To overcome these barriers, digital technologies and artificial intelligence (AI) offer new possibilities for creating secure and responsive support systems [19][24]. Mahila Suraksha Nyayavani is developed as a web-based application that enables women to report incidents safely and access immediate guidance [2]. The platform ensures privacy and confidentiality, allowing users to share details securely, with the option to remain anonymous when needed [7].

The system integrates Natural Language Processing (NLP) using the Bidirectional Encoder Representations from Transformers (BERT)[18] model to automatically analyze the content of submitted reports. The model interprets the text contextually and classifies each report based on urgency and severity [16]. This automated assessment helps in prioritizing high-risk cases, allowing authorities and legal personnel to respond more quickly and efficiently [7].

Beyond facilitating incident reporting, Mahila Suraksha Nyayavani emphasizes awareness, learning, and empowerment. It provides educational content through categorized articles on physical, mental, and emotional violence, [5] enabling users to recognize different forms of abuse. Additionally, the inclusion of self-defense tutorials and real-life incident videos encourages women to stay prepared and informed [2]. These features aim to promote self-reliance, confidence, and awareness among users.

A built-in AI chatbot assists users throughout the process by providing real-time guidance, answering queries, and helping them connect with relevant authorities or legal advisors [19]. The system includes separate login modules for



users and officials, ensuring data security and access control[7]. Feedback mechanisms are incorporated to gather user experiences and suggestions for continuous improvement of the website[10].

Ultimately, Mahila Suraksha Nyayavani functions as more than a complaint-reporting tool—it acts as a digital safety ecosystem that combines artificial intelligence, user education, and real-time communication to strengthen women's protection[24]. By integrating technology with social responsibility, the platform empowers women to act against violence and contributes to building a safer, more inclusive society[8].

II. LITERATURE REVIEW

[1] Ensuring the safety of women in the digital era is a pressing societal challenge. With rapid advancements in technology, women increasingly face cyber threats such as online harassment, cyberbullying, stalking, and identity theft. Despite growing technological capabilities, current security measures and legal protections are often insufficient, leaving women vulnerable to both online and offline risks. Addressing this gap requires a combination of digital literacy, awareness programs, and effective policy interventions. Moreover, creating a secure digital environment demands a multi-stakeholder approach, involving government bodies, technology providers, civil society, and law enforcement agencies, to design systems that are both safe and inclusive. Protecting women online is therefore not only a technical or legal issue but also a broader social imperative, particularly in India's rapidly expanding digital ecosystem, where increased online participation exposes women to a diverse range of risks.

[2] Beena et al. (2025) present *Mahila Suraksha Nyayavani*, an integrated digital platform designed to enhance women's safety and access to justice through technology. The system enables victims to report crimes directly, access self-defense tutorials, and receive real-time assistance via an AI-based chatbot supporting "Kunglish" communication. The paper emphasizes how categorizing violence into digital, emotional, and physical domains helps users identify their concerns effectively. By integrating legal information, awareness resources, and direct links to law enforcement, the platform bridges gaps in traditional reporting mechanisms. The authors highlight its role in promoting digital empowerment and fostering a secure, inclusive online environment for women.

[3] The increasing prevalence of cybercrimes against women on social media platforms in India has raised significant concerns regarding their online safety. This study examines the specific vulnerabilities women encounter, including cyberbullying, online harassment, and identity theft, which often deter active participation in digital spaces. To address these challenges, the authors propose a combination of legal reforms, community engagement initiatives, and technological innovations aimed at enhancing protection for women. The research emphasizes the critical role of digital literacy programs and proactive policing in creating a secure and empowering online environment. The study concludes that ensuring women's safety on social media requires a multifaceted approach, integrating policy measures, educational outreach, and technological solutions to effectively mitigate cybercrime in an increasingly dynamic digital landscape.

[4] This study explores how structured performance management can enhance police effectiveness in addressing crimes against women in India. Using a survey of 310 law enforcement officials from northern regions, the research evaluates the application of the Balanced Scorecard (BSC) model to monitor and improve operational outcomes. The four perspectives of the BSC—financial management, stakeholder engagement, internal processes, and organizational learning—were identified as key factors that help officers prioritize resources, track progress, and strengthen accountability. The study highlights that adopting systematic performance evaluation not only improves response times and investigative efficiency but also reinforces institutional mechanisms to better protect women from gender-based violence.

[5] The role of digital applications in enhancing women's safety, particularly against cyber threats. By analyzing prominent women safety applications, the research evaluates their usability and effectiveness in safeguarding women from cyber threats. The study highlights how these digital tools can empower women, providing them with immediate assistance and resources in times of distress. It underscores the importance of integrating technology into safety measures, suggesting that well-designed applications can play a pivotal role in preventing and addressing crimes against women.

[6] The rising incidence of cybercrimes against women in India and underscores the significant gaps in the current legal system. The authors argue that while the Information Technology Act and Indian Penal Code provide a framework for addressing cyber offenses, they fall short in dealing with crimes specific to women such as cyberstalking, revenge porn, and online harassment. The study calls for gender-sensitive legal reforms and awareness programs that empower women to protect themselves in the digital space. which seek to provide a direct, secure, and user-friendly interface for women to report cyber and other forms of violence.



[7] The urgent need for efficient digital crime reporting systems specifically tailored for women's safety. The authors identify major drawbacks in existing systems, including poor interface design, weak data security, and lack of administrative transparency. To address these limitations, the paper proposes a web-based complaint portal designed to enhance usability and confidentiality. The system aims to reduce bureaucratic hurdles and paperwork, offering a more accessible and secure platform for women to report crimes which seek to empower women through technology-driven safety solutions.

[8] A mobile application has been designed to provide instant assistance to women in emergency situations. Developed by researchers from Quantum University, Roorkee, the solution enables users to trigger alerts discreetly by simply pressing the volume button, making it effective in high-stress scenarios. The app also features real-time GPS tracking and rapid alert mechanisms to notify emergency contacts and nearby police stations. This system exemplifies how smart technology can be harnessed to enhance personal safety and responsiveness. Its user-centric design and quick activation align with the broader objective of integrating convenience, safety, and digital empowerment into crime reporting tools for women.

[9] The evolving nature of cybercrime and its disproportionate impact on women in India. It identifies various forms of online abuse such as cyberstalking, revenge porn, and online harassment, and assesses the effectiveness of current legal frameworks in addressing these crimes. The study combines empirical data from surveys with legal analysis, emphasizing the psychological and social consequences experienced by victims. The authors call for stronger enforcement of cyber laws, better digital literacy, and institutional reforms to improve redressal mechanisms, to offer safe, accessible, and legally informed spaces for reporting and combating online crimes against women.

[10] This paper reviews how women in India face abuse on social media platforms like Twitter, Facebook, and Instagram, and how machine learning is used to detect such content. It discusses abusive content detection, sentiment analysis, data preprocessing, and supervised vs. unsupervised learning. The study notes that most systems focus on a single platform and lack real-time monitoring and wide geographic coverage. It recommends integrating ML, Android apps, and IoT modules to build a comprehensive abuse detection and alert system.

III. PROPOSED METHODOLOGY

The Mahila Suraksha Nyayavani platform is designed as a comprehensive solution to enhance women's safety by integrating secure reporting, intelligent risk assessment, educational support, interactive guidance, and real-time authority coordination[2]. The methodology combines modern artificial intelligence, user-centric design, and institutional collaboration to create a holistic safety ecosystem[19]. The approach ensures timely interventions while simultaneously empowering users with knowledge and practical skills[24].

A. Data Collection and Preparation

The website collects incident reports submitted through a secure online interface[2]. To encourage honest reporting, users have the option to remain anonymous, reducing hesitation due to fear or social stigma[3]. Reports are categorized by type of violence—physical, emotional, mental, or digital—and initially tagged for risk assessment[5].

Prior to AI analysis, the data undergoes preprocessing, including:

Removal of irrelevant characters and symbols, Tokenization and normalization of text to standardize inputs., Conversion into numerical embeddings using BERT (Bidirectional Encoder Representations from Transformers),[18] capturing the semantic and contextual nuances of the report.

These steps ensure that the AI system can interpret the reports accurately and detect subtle indicators of urgency and severity. The platform collects incident reports submitted through a secure online interface. To encourage honest reporting, users have the option to remain anonymous, reducing hesitation due to fear or social stigma. Reports are categorized by type of violence—physical, emotional, mental, or digital—and initially tagged for risk assessment.

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Fig 1:Rise of Cyber Crimes (2011-20)

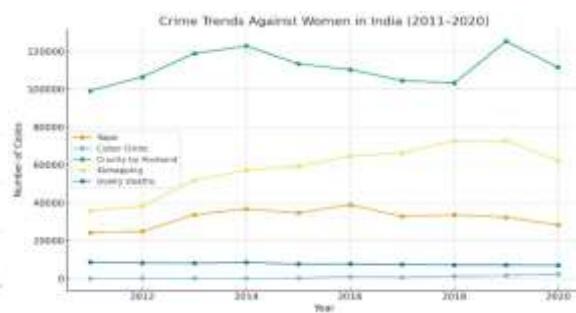


Fig 2: Crime Trends Against Women (2013-2020)

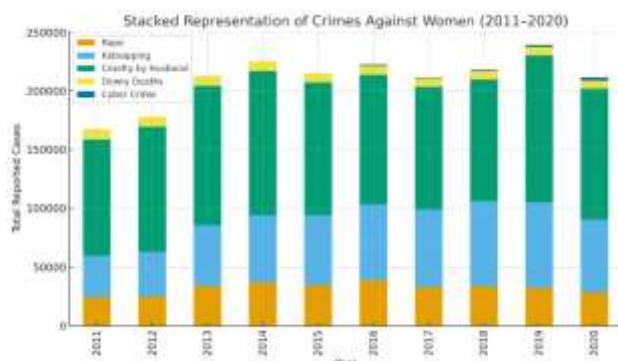


Fig 3: Stacked Representation of Crimes (2011-2020)

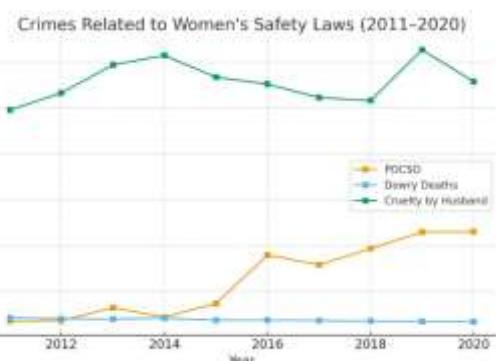


Fig 4: Crimes Related to Women's Safety Laws

B. AI-Based Risk Assessment

A BERT-based Natural Language Processing (NLP) model forms the core of the platform's risk assessment mechanism[21]. The AI analyzes reports to determine the urgency and potential danger of each incident. Based on the assessment, reports are classified into:

High-risk incidents, which trigger immediate notifications to authorities and legal professionals, Medium-risk incidents, which are logged for monitoring and follow-up action, Low-risk incidents, which are stored for trend analysis and preventive planning. This automated classification ensures that critical cases receive rapid attention, reducing delays in intervention.

C. Reporting and Alert Mechanism

Upon determining the risk level, the platform initiates a tiered alert system:

High-risk cases are immediately communicated to the relevant authorities [19] for urgent action, Medium-risk cases are monitored and followed up periodically, Low-risk cases contribute to analytical insights, helping authorities identify patterns and implement preventive measures. The system optimizes resource allocation while maintaining comprehensive coverage of all incidents [24].

Table 1: Performance evaluation

Model	Accuracy (%)	Precision (%)	Recall (%)	F1-Score (%)	AUC (%)
Logistic Regression	85.2	83.5	84.7	84.1	88.0
Random Forest	90.1	89.0	90.5	89.7	92.3
Support Vector Machine	88.5	87.2	88.0	87.6	90.1
K-Nearest Neighbors	82.7	81.0	82.0	81.5	85.0
Proposed CNN Model	93.4	92.1	93.0	92.5	95.2

**D. Educational and Awareness Module**

To empower users beyond reporting, the platform includes structured educational resources:

Articles and guides categorized by type of violence to help users recognize and understand different forms of abuse, Self-defense tutorials and instructional videos that provide practical techniques for personal safety, Real-world incident videos that highlight risks and strategies for timely action[10]. These modules enhance awareness and preparedness, enabling users to respond proactively to potential threats.

E. Interactive Assistance

The platform features an AI-driven chatbot to provide real-time guidance. The chatbot can:

Assist users in filing reports. Respond to queries regarding safety measures and procedures, Offer personalized advice based on user input It is designed to support multi-language input, including hybrid “Kunglish” formats, improving accessibility and user engagement[19].

F. User and Authority Interfaces

The system provides separate interfaces for general users and authorities:

User interface allows access to reporting tools, educational resources, and tutorials. Authority interface offers a dashboard to review, track, and manage incidents efficiently. A feedback mechanism collects user suggestions, facilitating continuous improvement of platform functionality and usability while maintaining strict data privacy.

G. Integration with Support Networks

A critical feature is its integration with law enforcement and legal professionals, enabling:

Direct communication with authorities for timely intervention, Coordinated responses between multiple agencies, Increased resolution efficiency and user confidence. This connectivity ensures that the platform goes beyond passive reporting to actively support protection and assistance in critical situations.

H. System Workflow Overview

The operational workflow of the platform includes:

Submission of incident reports through the web interface, Preprocessing and conversion of report text into BERT embeddings, AI-based evaluation to classify risk levels, Notification of authorities based on priority, Access to educational materials, self-defense tutorials, and case study videos, Real-time guidance from the chatbot, Collection of feedback for continuous system enhancement. This structured workflow ensures efficient report handling, user empowerment, and rapid authority response.

Key Advantage: The methodology integrates AI, multimedia content, interactive guidance, and institutional support, making the platform a proactive safety solution rather than a reactive reporting tool. By combining technology with education and real-world support, Mahila Suraksha Nyayavani enhances both immediate protection and long-term awareness, creating a comprehensive framework for women's safety in physical and digital environments.

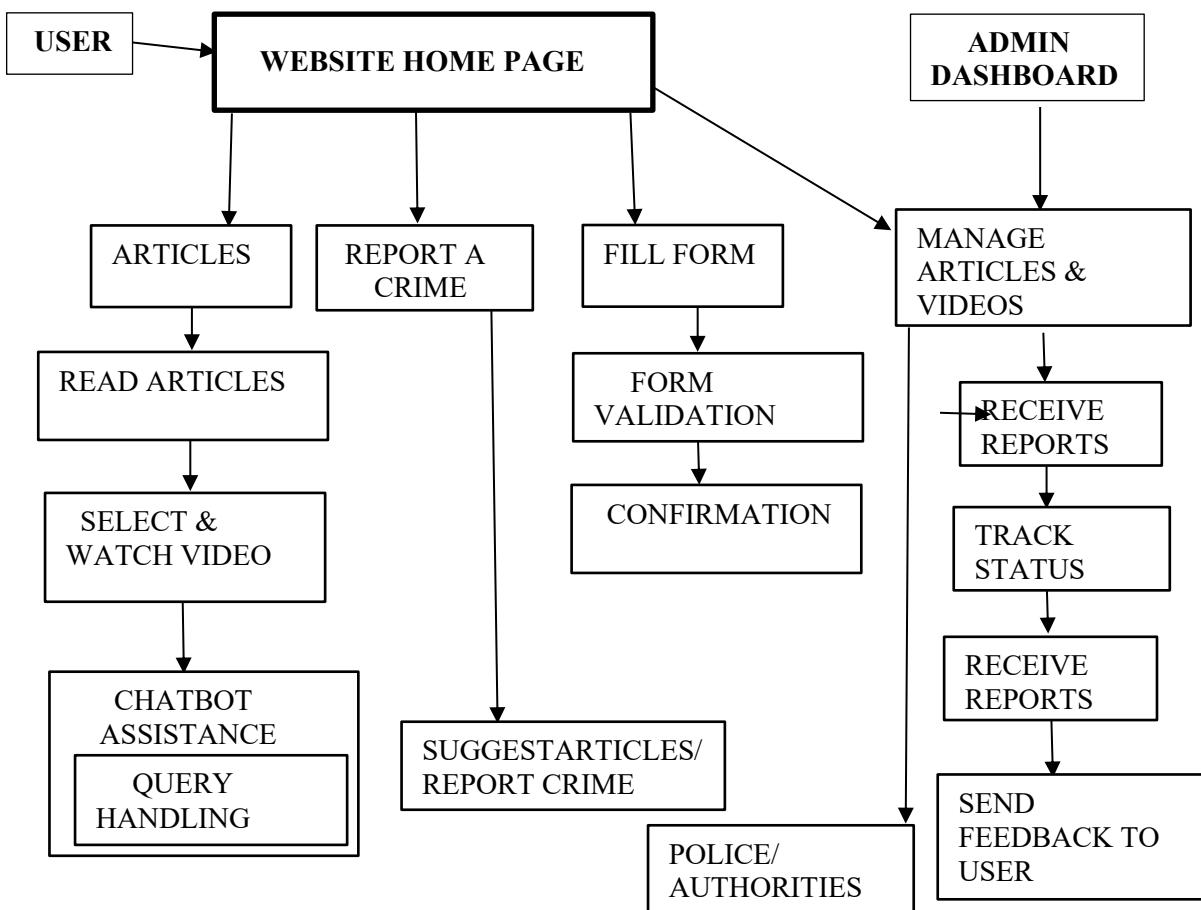


Fig 5: System Architecture of Mahila Suraksha Nyayavani

IV. RESULTS AND DISCUSSION

The project demonstrates that the system effectively enhances women's safety, awareness, and access to justice through its user-friendly interface and efficient features[2]. Users could easily navigate educational articles, self-defense videos, and reporting tools, which improved their understanding of digital, emotional, and physical violence[10]. The complaint submission module enabled real-time reporting and status tracking, ensuring transparency and building trust between users and authorities[24].

Module/Feature	Tested Users	Successful Use(%)	Observations
User Registration and login	50	100%	Users could register and log in without issues
Article Access	50	98%	Users easily navigated content; 2% faced minor delays
Self-defence videos access	50	100%	Videos loaded properly; content considered informative
Chatbot guidance	50	96%	Chatbot answered queries accurately; 2 users found incomplete
Crime reporting form submission	50	100%	All reports submitted successfully and stored in the database
Complaint Tracking	50	94%	Some users experienced minor delays in status update display

Table 2: Performance evaluation of models using Manually Collected Dataset



The integrated AI chatbot played a key role in guiding users, providing instant responses, and simplifying the reporting process. Categorized educational content and secure data management further strengthened user confidence, ensuring that information remained accurate and confidential[24]. Overall, the system bridges the gap between victims and law enforcement while promoting awareness and preventive action,[23] demonstrating a holistic approach to women's safety and empowerment in both digital and physical spaces.

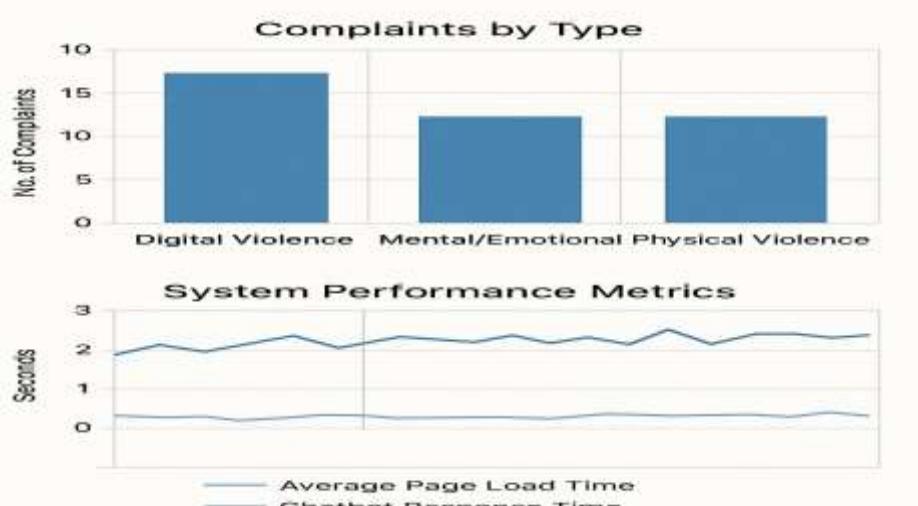


Fig 6: Complaint Analysis and System Performance Metrics

V. FUTURE WORK AND CONCLUSION

The current system provides a platform for women to report violence and access educational resources, but there are several avenues for improvement and expansion:

Advanced AI Chatbot Capabilities: Enhancing the chatbot to provide real-time legal advice and emotional support using natural language understanding.

Integration with Law Enforcement Systems: Direct automated notifications to nearby police stations or emergency responders for faster action.

Mobile Application Development: Launching a mobile app to make the platform more accessible to users on-the-go.

Data Analytics and Reporting: Incorporating dashboards to analyze trends in violence cases, helping policymakers and NGOs make informed decisions.

Multilingual Support: Expanding the platform to support regional languages for wider accessibility.

These enhancements aim to make the platform more responsive, proactive, and user-friendly, ultimately contributing to better safety and awareness for women.

VI. CONCLUSION

The "Mahila Suraksha Nyayavani" system addresses the pressing need for a safe and efficient platform for women to report violence and access relevant resources. By combining digital reporting, educational content, self-defense guidance, and a supportive AI chatbot, the system empowers women to take action against violence while ensuring their safety.

This project demonstrates how technology can bridge gaps between victims and law enforcement, raise awareness about different forms of violence, and provide practical tools for protection. Future enhancements, such as AI-driven assistance, mobile accessibility, and data analytics, will further strengthen its impact, making it a robust and comprehensive solution for women's security.

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