

## Child Abuse Risk Prediction and Prevention Framework using AI and Dark Web

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**Abstract:** Child abuse is one of the most heinous crimes ever committed in our society. Child sexual abuse (CSA) has recently been widely accepted as a problem in India. About one case every 12 minutes, and 5 children die from child sexual abuse every day. Any form of child abuse or violence is important and will not be ignored. It profoundly affects a child's mental health so much that it influences later life. Before that, the prevention of child sexual abuse has become a critical issue and a concerted effort in all areas of society: family care, schooling, community-based management, and social norms. Therefore, taking appropriate measures to save every child from violence is essential. A learning strategy for new sexuality against child sexual abuse is proposed to reduce youth violence on the black web. This project proposes a modified LSTM algorithm based on deep learning used to find the purpose of sex and prevent child abuse by not allowing the child to visit the place or person. This CAP API will be able to identify and report child abuse in real-time without violating any privacy. Risk guessing is based solely on web browsers for users. The analysis of child abuse is based on a telemetry database provided by a large Network Service Provider. This database is processed, and the features and patterns hidden in the data are retrieved; finally, LSTM is designed to match the problem of predicting the Sexual Outcome of the selected geo location or mobile using all the information obtained in the analysis step number provided by using SI predictor. CAP is committed to preventing child sexual offences on the black web and artificial intelligence.

**Keywords:** Child Abuse, Risk Prediction, Prevention Framework, AI, Dark Web.

### Introduction

Child abuse occurs when a caregiver damages a child's emotional or physical well-being. It could be for boys or girls in any family [1-5]. Child sexual abuse includes any sexual activity with a child for which consent may not be granted or will not be granted [6]. This includes forced or coercive sexual intercourse, regardless of the age of the participants, and all sexual contact between the adult and the child, whether there is deception [7-13]. Sexual contact between an older child and a younger child can also be traumatic if there is a significant difference in age, size, or size, making it difficult for a young child to give informed consent [14]. Child sexual abuse can occur in various settings, including home, school, or workplace (in areas where child abuse is common) [15-19]. Child marriage is one of the most common forms of child sexual abuse. In a survey of college and college students, one in four women and one in six men reported being sexually harassed or abused before they turned 18. Both harm children and teenagers, and both are against the law [20-25]. Child sexual abuse is not just physical abuse; it is a trust and/or authority breach. Artificial Intelligence, AI, is a philosophical and practical concept that machines can perform tasks in a way that humans perceive to be 'intelligent [26].' Initially, AI focused on making computers perform a series of challenging tasks, such as calculating increasingly complex numbers [27-33]. However, as our technology and

understanding of the human brain changed, AI work was focused on mimicking human decision-making processes and performing tasks in many 'human' ways. Now it depends on the saying that wisdom learns without teaching or planning [34]. The current edge of AI is machine learning, born of the idea that machines should be able to train with data and read for themselves [35-43].

## Existing System

The existing system uses various standard machine learning methods, including Logistic, Decision Tree, and Naïve Bayes retrieval for adult and non-adult websites, based on various selection factors to improve outcomes [44]. In Logistic Regression Mathematical retrospective is a statistical variance that may be intended to predict a category from factors that present continuous or different values [45]. Compared to other differentiation methods, one of its advantages is that it does not explicitly require features that can be associated with another [46-51]. In addition, if new data is available, logistic regression can properly update models according to new inputs. In another method, the Support Vector Machine (SVM) algorithm restores whether the image is safe or unsafe [52]. The proposed model separates the image between safe/unsafe and blurs/paints the exposed part of the skin completely black if the image is unsafe (i.e., sexually explicit) using the image processing method [53-57].

The Random Forest is a popular machine learning algorithm part of supervised learning technology [58]. It can be used for both Editing and retrospective problems in ML, which combines multiple dividers to solve complex problems and improve model performance [59-67]. Since the random forest includes many trees to predict the database phase, some decision trees may predict the correct output, while others may not [68-72]. While using the Convolutional Neural Network, CNN, as its name implies, claims to be a network that uses convolution; to clarify further, it uses convolution instead of matrix duplication of at least one layer. CNN to read and view webpages for web pages [73]. To eliminate the impact of complex and uncomplex information, our approach recognizes the independence of the required information provided by the source code of the separate web pages [74-87]. Utilizes CNN efficiency in image reading and segmentation [88].

## Disadvantages

- It often confuses the discovery of a sexual website and leads to inefficiency.
- Punish segregation in different ways. Classification.
- Mislead differentiation models by misleading feature values.
- Get only lists of websites visited.
- It takes time to parse a URL.
- Reduced performance.
- You cannot identify a person with sexual intent.

## Proposed System

URL-based detection methods do not require access to the web page content before making a decision and, as a result, have the advantage of faster recovery speed [89]. The Proposed CARP program is designed to automatically detect and filter gambling and pornographic websites and predict online user sexual intent using the Advanced Learning method. Typically, a user enters a URL in a browser for specific information [90-96]. A clever method with the proposed CAP serves as a real-time website to test user access requests and predict purpose. When a given URL is assigned, the proposed system first compares this URL with the URL of the restricted list and the authorized libraries [97]. If the URL already exists in a restricted URL list or an authorized list library, the system identifies the website

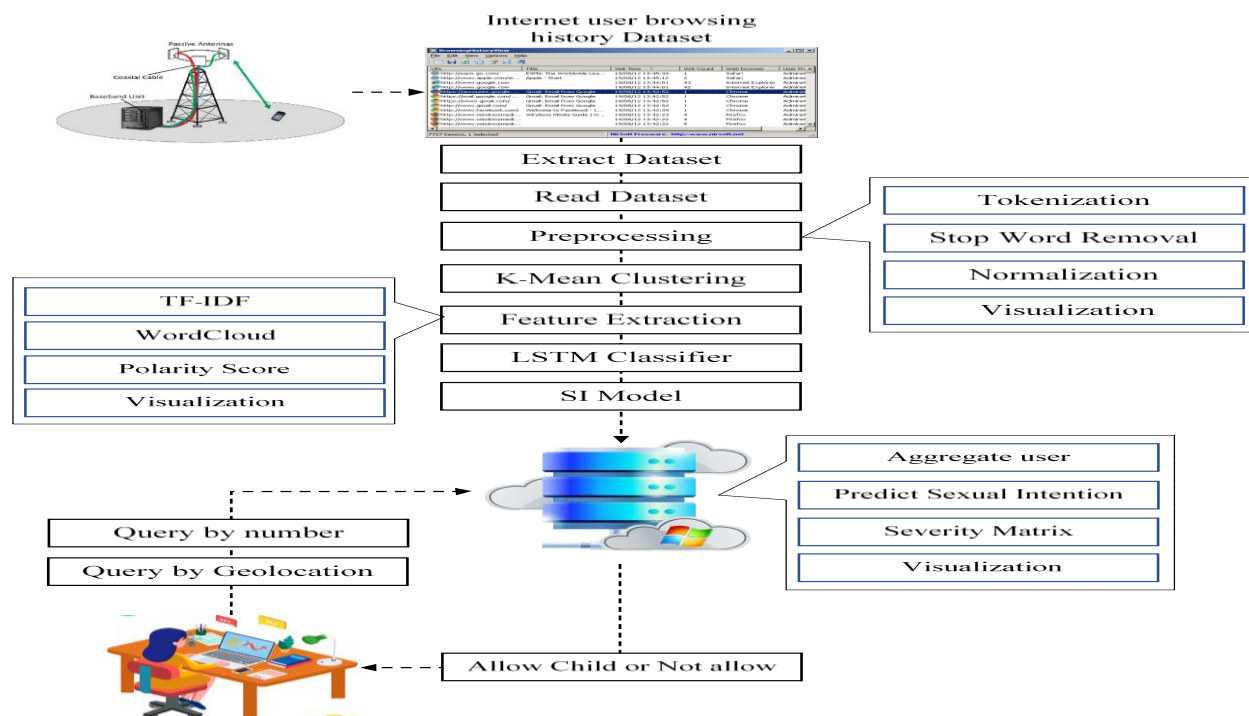
category directly without additional content analysis. This step can significantly save system recovery time [98-105].

Following the ban list and whitelisting to identify anonymous URLs, the proposed web content filtering system will perform the following steps [106-111]. They access the URL and retrieve the source code of the website and related website content by crawling the web and decomposing; extract the text and content elements from the source code of the website and the screenshots of the website, respectively; use the corresponding LSTM separator to make initial predictions of these two types of features; use the decision-making process to judge and remove the final section of the website and add this URL to our blocked list of URLs or our authorized list for review and then the SI predictor will verify the geolocation and number and give result to the administrator to allow the child or not for that particular place (figures 1 and 2) [112-119].

### Advantages

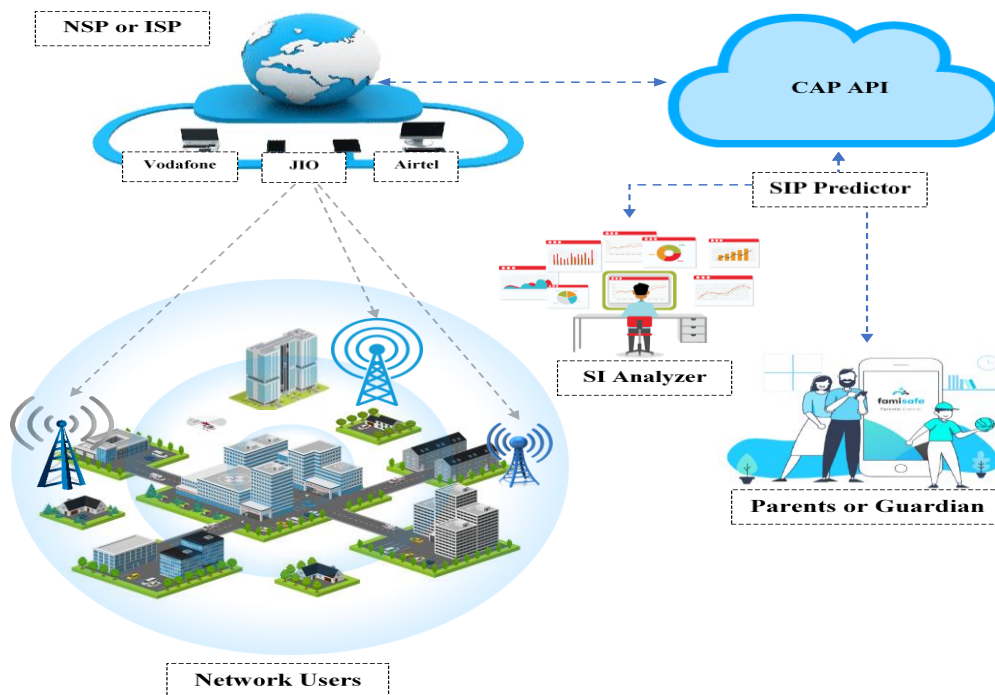
- Proposed methods can improve the efficiency and effectiveness of class dividers [120].
- The website is built using the proposed methods of predicting a person with a
- Sexual intent. With High prediction accuracy [121-127].
- The system is very scalable and collects data in real-time. Blocklisting is used to detect sexual URLs.
- Calculates opportunities for specific users. Remove strong and functional features. Accurate planning [128].

### Architectural Framework of The System



**Figure 1:** Architecture of the proposed system

## Methodology



**Figure 2:** Overall concept flow diagram

## Network test update

Network testing is a complete overhaul of network users' information to limit behaviour to a certain degree [129-131]. One of the most popular network search actions is to add a few IP addresses or domain names to a restricted list and prevent users from visiting those websites. Using data analysis of network users' behaviour when undergoing network testing, we collect useful information and use it to add or remove members from the restricted list [135-139]. We think this network test design can work better than a robust test to filter restricted information and retain qualified people [140].

## LSTM

The idea of RNNs is to use sequential information [141]. The normal neural network assumes that all inputs and outputs are independent of each other. In Common Networks, nodes take current input as input and previous calculations [142-144]. LSTM is designed to improve the ability to deal with the long-term dependence problem of RNN. Due to the structure of LSTM, it can process data based on a timeline very efficiently.

## Index of Sexual Intent User Request Timeout.

We show the appearance cycle of the client's application as indicated by its conveyance time (IAT). When we think about various grown-up sites, we see that recordings of grown-up sites have more limited IAT applications than grown-up sites with pictures. For video content on grown-up sites, the normal IAT demand is under 10 minutes and over 1 hour for grown-up sites with pictures. We later utilize this view to appraise the client's term. Client Session Length. According to the viewpoint of content distributors and CDNs to connect with clients, key measurements are generally determined as far as site knock time. From the organization side logs, we can assess the client connection in light of the client's length, 1 where the meeting contains successive client demands during the span. Set the end time limit for client time for 10 minutes in light of our past examination of IAT dissemination of

client demand. Client Addiction. To additionally research client contribution, we next break down client fixation. We examine redundant substances got by the client to research content dependence. We work out the complete number of uses for everything and the outnumber of exceptional clients making these applications. Things that are much of the time got to by a solitary client or a predetermined number of clients ought to be put away in a nearby archive close to ending clients in the cloud data set.

## Modules

1. CAP web dashboard
2. User management
3. User Intention Analyzer
  - 3.1. Annotation Database of browsing history
  - 3.2. Processing
  - 3.3. Feature Domain
  - 3.4. LSTM Classifier
  - 3.5. SI model
4. SI Predictor
  - 4.1. Question about Geo location
  - 4.2. Question by Mobile Number
  - 4.3. Predicting the Purpose of Sex
  - 4.4. Addiction Score
  - 4.5. Visualization
5. Recommender
6. Performance Analysis

## Module Description

### CAP web dashboard

The web cloud CAP application data can be stored in this module in the cloud. The CAP API will be used in a cloud-based application. Here we break down repeating content that the client approaches to examine content dependence. For everything, we work out the outnumber of utilizations and the complete number of one of a kind clients that make up these applications. Things that are typically open to a solitary client or a predetermined number of clients should be put away in a storehouse close to clients on a cloud site.

### User management

In the user management module, the user can complete the registration details on that website. Once registered, a user can log on to that website and upload the data to guess and investigate that person's chrome data. If a user is present, there is no need to fill out details and register. Here users are either parents or guardians.

### User intension analyzer

This user experience analysis module has five steps of analysis: a site of browsing history annotations, processing, feature domain, LSTM separator, and SI model. As the browser history annotation website

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can be collected and stored on the site, processing the URL input can be read, and the features can be extracted. The LSTM separator used to differentiate is designed to improve the ability to deal with long-term RNN dependency. Thanks to the LSTM architecture, it can process data based on a timeline very effectively. The program is processed, and the features and patterns hidden in the data are retrieved; finally, LSTM is a simulation problem predicting the Sexual Outcome of an uploaded human database using all the information obtained in the analysis step.

## SI forecast

SI predictor will predict the location or mobile number of a specific user provided by the user. Details of that sexual orientation can be predicted from LSTM classification data as a reference.

## Command

We then investigate someone's chrome data using the LSTM separator, and this website will recommend to parents whether to allow the child or not in that area.

## Performance analysis

In this module, the overall functionality of the enhanced website is analyzed. Our system, designed based on the deep learning LSM method, provides a better result than other algorithms.

## Result

Thus, our project to predict the risk of child abuse and the prevention framework using artificial intelligence and the black web has been successfully implemented. In this project, a user can log on to our website and download data predicting machine learning algorithm to predict child abuse LSTM predicted sexual aggression. This data can be linked to clouds with the help of CAP (figures 3 to 8).

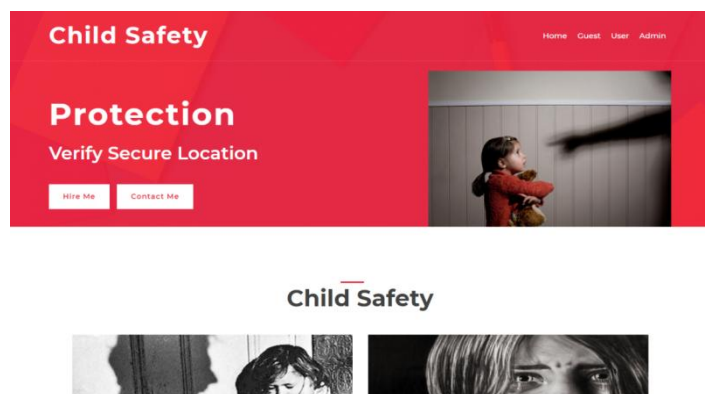


Figure 3: Child safety website front page

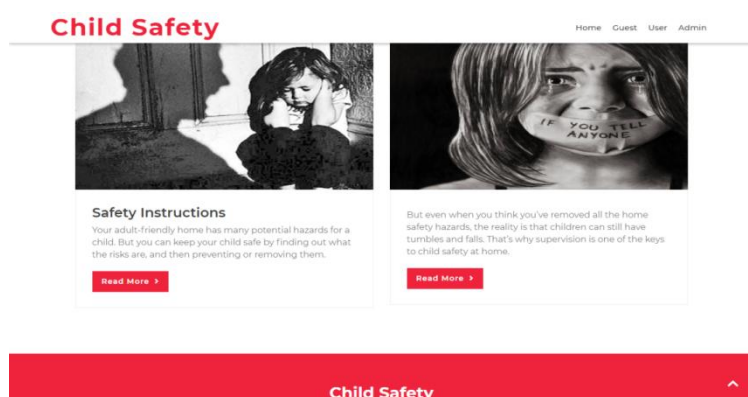
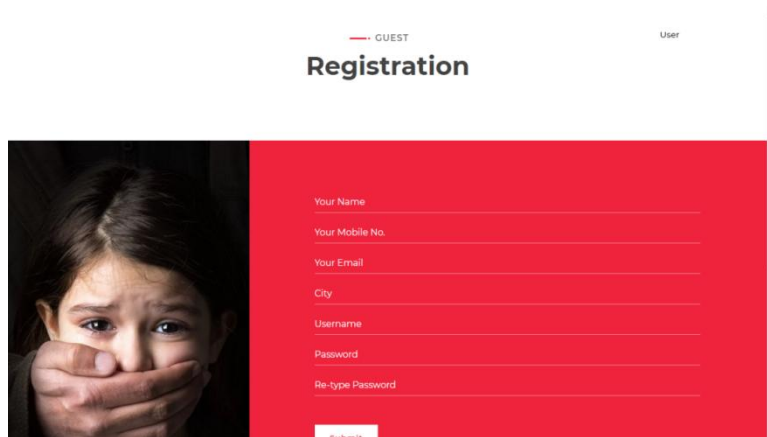
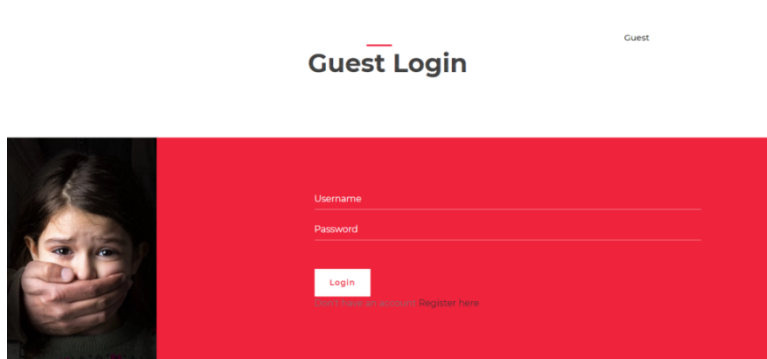


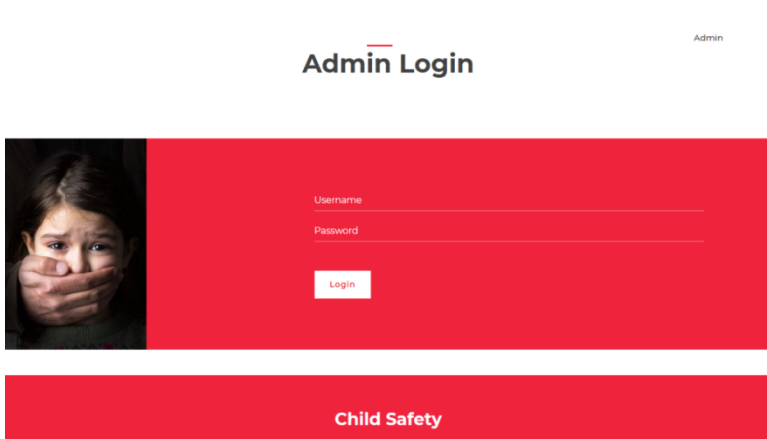
Figure 4: Child safety website page



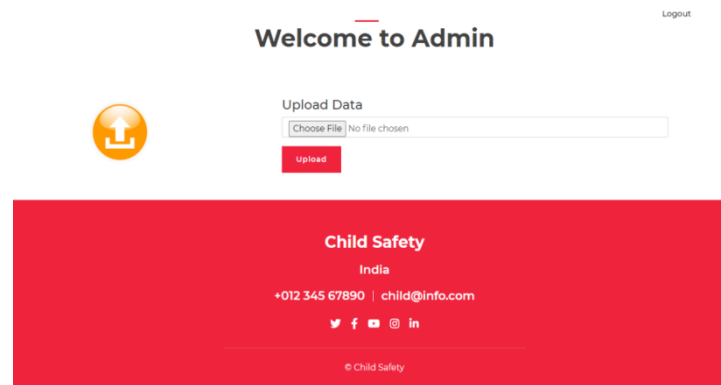
**Figure 5:** User registration page



**Figure 6:** Guest login page



**Figure 7:** Admin login page



**Figure 8:** Website page for admin use

## Conclusion

Although the forecast analysis is being explored in both the public and private sectors enthusiastically, there is concern that the use of big data technology did not have enough academic discourse before organizations adopted these strategies. There is much more to learn and consider when it comes to practical wisdom and its role in child welfare decisions. This project is being developed at the beginning of a multi-year Predictive Analytics system for Children and Families investigated fraud and child abuse predicted based on personal chrome data using the LSTM section. This website supports the reason for increased investment in early intervention programs in children's lives to support themselves and their parents to prevent child abuse.

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