

# Project Jagriti: Crowdsourced Child Abuse Reporting

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**Abstract**—Child abuse and its myriad forms often go undetected due to the geographically distributed and widespread nature of the crime. The process of reporting is also long and is often used as an excuse to allow the proliferation of these activities. To prevent the crime from going unpunished, this paper introduces a browser based web application and a mobile application called Project Jagriti that uses the power of Crowdsourcing to ensure justice for the child victims. All reports of child abuse filed using the platform are forwarded to the Child Welfare Committee (CWC); a body constituted by the Government of India to oversee child welfare and expedite the process of recovery and rehabilitation of the victims. The platform also provides anonymity for encouraging users.

**Index Terms**—Humanitarian Technology, Crowdsourcing, Child Abuse, Smartphone Application, Web Application

## I. INTRODUCTION

Child abuse has many forms: physical, emotional, sexual, neglect and exploitation among others. Any of these that are potentially or actually harmful to a child's health, survival, dignity and development can be categorized as abuse. A major concern however, is that majority of child abuse cases go undetected mostly because of the clandestine and geographically distributed nature of the crime.

Although many people sympathize with such children, their sympathy is not converted into action. There is a need therefore, to bridge this communication gap and provide a framework that allows people to make a difference in a clear and simple way without having to deal with unnecessary details.

Project Jagriti is such an attempt to catalyze and contribute to social welfare efforts using the power of Crowdsourcing for problem identification as well as resolution by providing an anonymous, straightforward platform for reporting child abuse related issues.

The platform funnels incoming reports from the browser based web application as well as the mobile application onto a common internet database. The reports, after initial filtering, are then forwarded to the Child Welfare Committee (CWC), a body constituted by the Government of India, which oversees

child welfare in their jurisdiction. They expedite the process of recovery and rehabilitation of these child abuse victims by coordinating with the concerned authorities. Project Jagriti is currently active in and around the Mangalore district in Karnataka, India. We aim to scale up to a larger geographical area through further collaboration.

Project Jagriti is currently available as a browser based web application[9] and as an application for Android devices[8]. The frontend for the web application was built using HTML, CSS, JavaScript and JQuery. The backend was built on PHP and MySQL. The application for Android devices was built using Apache Cordova[7].

The rest of the paper is organized as follows. Section 2 describes the Related Work in Software Development for tackling Child Abuse[14]. Section 3 discusses the problem, the motivation behind choosing this problem and the viability of Crowdsourcing as a solution to the problem. Section 4 describes the Application Development process including the appropriate software development lifecycle model, interface design and the tools used. Section 5 discusses the details of the application and the reporting process. The paper then closes with sections detailing the Conclusion, Future Work and References.

## II. RELATED WORK

Most states in the United States of America have Anonymized Child Abuse Reporting systems. The state of Florida in the United States for example has an online Abuse Reporting Portal[4] as well as an Abuse Hotline[3] under the Florida Department of Children and Families.

Similar facilities have been instituted in India. The 1098 hotline and associated software assistance systems provide child abuse reporting facilities[12]. However, neither a web application nor a smartphone based application is available for child abuse reporting. Consequently, the process of reporting a crime of this nature has become tedious. Project Jagriti aims at reducing this latency and providing a convenient and anonymous platform for child abuse reporting by leveraging technology that is nearly ubiquitous today.

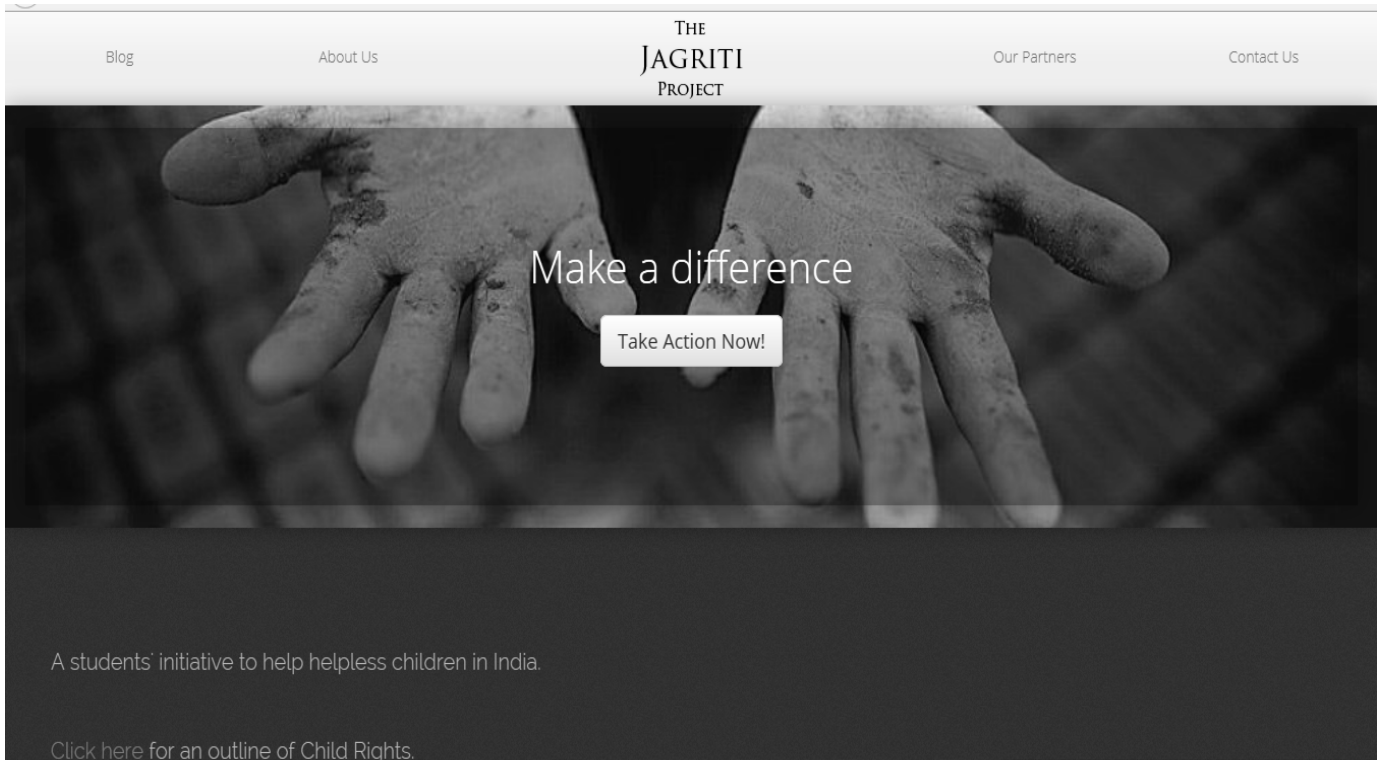


Fig. 1. Web Application Interface for Project Jagriti

Fig. 2. Online Form for Child Abuse Reporting - Part 1

Fig. 3. Online Form for Child Abuse Reporting - Part 2

### III. PROBLEM AND SOLUTION DESCRIPTION

#### A. Motivation

A child abuse study commissioned by the Government of India was released by the Ministry of Women and Child Development (MWCD) in 2007[10]. This study served as a

grim reminder of the dire situation of child abuse in India. The study reported that children between the ages of 5-12 are at the highest risk for abuse and exploitation. 69% of children were reported to have been physically abused. Out of these 54.68% were boys. With regard to child labour, 50.2% of children worked all seven days of the week. 81.16% of the girl child labourers work in domestic households, while

84% of the boy child labourers worked in tea stalls or kiosks. 65.99% of boys and 67.92% of girls living on the street reported being physically abused by their family members and other people.

The study also examined emotional abuse (humiliation and comparison) and girl child neglect. Half the children reported facing emotional abuse with 83% of that abuse being conducted by parents. Girl child neglect was assessed based on girls comparing themselves to their brothers on factors like attention, food, recreation time and household work. 70.57% of girls reported having been neglected by family members. 48.4% of girls wished they were boys. 27.33% of girls reported getting less food than their brothers. Of the young adults (ages 18-24) interviewed, almost half of them reported having been physically or sexually abused as children.

This startling study resulted in the Integrated Child Protection Scheme (ICPS) being proposed and approved in 2009 to shield children from violence and abuse. With the advancement and penetration of internet-enabled technology in India, we believe that our platform can complement and catalyse the government's efforts to shield children from violence and abuse.

According to reports published by the Internet and Mobile Association of India (IAMAI) and the International Telecommunications Union (ITU), internet penetration in India is close to 20% which translates to 243 million users ranking third in the world in total number of internet users[6]. Mobile internet penetration was close to 8.9% translating to another 88.5 million users[5]. Given the large number of people that have access to internet-enabled devices, we believe that a combination of the browser based and the mobile application leveraged off modern technology will satisfy the objective of reducing latency in the child abuse reporting process thus contributing to the recovery and rehabilitation efforts.

### B. Problem Statement

The aim therefore, is to provide an application, platform or solution that is -

- Easily and universally accessible
- Easy and intuitive to use
- Anonymous
- Quick to action, Recovery and Rehabilitation

### C. Crowdsourcing as a viable solution

The emergence of Crowdsourcing as a solution to problems that are distributed in nature was first described by Howe[14]. Crowdsourcing is the process of soliciting contributions from a large audience (generally the public) to provide services, ideas or contents. Since then, Crowdsourcing has been successfully applied to various fields.

Crowdsourcing is most often applied to large scale problems

that require the assimilation and analysis of huge amounts of data. Common applications include data collection[15], [11], mapping[16], [13] and Crowdfunding. Yuen et.al[20] provide a detailed analysis of the current Crowdsourcing algorithms and applications.

In this case, the nature of the problem is distributed. Consequently, the solution must also be distributed to allow the problem to be tackled efficiently. We bank on the ubiquitous nature of internet-enabled devices to achieve this. All internet-enabled devices will be able to connect to our platform and report child abuse cases while satisfying all the criteria listed.



Fig. 4. Smartphone Application Interface for Project Jagriti

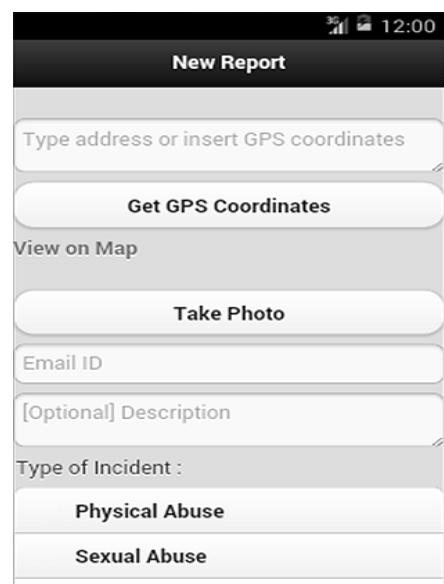


Fig. 5. Child Abuse Reporting on the Smartphone Application



Fig. 6. Typical Use Scenario

#### IV. APPLICATION DEVELOPMENT

##### A. Software Development Process

The development of the platform followed an incremental prototyping model. In this model, the platform is divided into several functional units and prototypes are developed for each of the functional units. Once each prototype is completely tested to satisfy the requirements, it is integrated into the final system.

The platform was divided into frontend (user interface) and backend functional units. The user interface prototype was developed using Balsamiq[2]. The development of the user interface was done iteratively[17] until all requirements such as ease-of-use and simplicity were satisfied.

##### B. Interface Design

The interface of the platform is centered on the task the user is supposed to perform (reporting child abuse in our case). The landing page of the interface welcomes the user with a distinct "Report Now" button which directs him to a form for collecting information that he thinks will be valuable to the concerned authorities apart from the mandatory information.

The interface allows the user to add contextual information such as photographs which will help the authorities better understand the nature of the offense. The interface also prompts the user to classify the nature of the report into appropriate categories such as Physical Abuse, Sexual Abuse and Emotional Abuse among others.

Once the report has been filed on the platform, the user receives a confirmation mail to his email Id if it has been provided. Since two different platforms are used for reporting, the web and the mobile application, the flow of subtasks must be kept consistent across the platforms. Design heuristics suggested by Neilson[19], [18] have been used to achieve this.

TABLE I  
ACTUAL COMPLAINT SUBMITTED ON THE PLATFORM

Received from	<i>(Withheld to preserve anonymity)</i>
Address	Sagar Vegetarian Paradise, Near Karkala Bus Stand, Karkala, Udupi.
Categories under which the complaint has been filed	Child Labour
Description (Paraphrasing)	I visited this hotel a few days ago and noticed 4-5 boys who appeared no older than 13 working there. The manager (presumably) was treating them rudely and one of the boys was crying.

##### C. Technologies Used

The following tools and technologies were used in the development of the platform.

- HTML, CSS and JavaScript for the frontend.
- MySQL for database management.
- PHP for server-side processing and database integration.
- PhoneGap for cross-platform mobile application development with a single code base.
- Android SDK to build for Android devices.[1]

#### V. TYPICAL USE SCENARIO

A typical use scenario is shown in the Figure 6. The platform receives reports from the witness through either the web interface or the mobile application. The report received from the web application contains the address of the crime, an optional description which the complainant can provide to supplement the report, category of the incident such as Physical Abuse, Sexual Abuse and Emotional Abuse among others as shown in the Figure 2 and Figure 3. Figure 1 shows the Web Application Interface for Project Jagriti.

The report received from the mobile application allows the automatic insertion of GPS coordinates and photographs in addition to the above contents. The android application interface is shown in Figure 4 and Figure 5.

After initial screening to weed out false reports, they are forwarded to the Child Welfare Committee (CWC); a body constituted by the Government of India to oversee child welfare and expedite the process of recovery and rehabilitation of the victims.

Within their jurisdiction, the CWC has powers to order or conduct searches and facilitate rehabilitation and recovery. Success stories act as a feedback mechanism for the reporters and encourage others to use the platform.

One of the first reports received through the platform is included in Table 1. The complaint resulted in swift police action against the hotel and its management.

## VI. CONCLUSION AND FUTURE WORK

The platform developed satisfies the criteria detailed in the problem statement and provides an effective solution for reporting child abuse incidents. The platform eliminates unnecessary complexity in the reporting process and allows prospective users to report anonymously with ease.

We would like for the platform to be integrated into the fold of current government schemes such as the Integrated Child Protection Scheme (ICPS) thus serving as a well-rounded and centrally operated system.

We would also like to geographically expand to cover regions beyond the Mangalore district. As the volume and velocity of the incoming reports increase, we would like to automate the process of blacklisting of false reports. A similar model can be used to track and address other distributed crimes including crimes against women, consumer rights violations and civic issues.

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