

Software Development Group Project  
5COSC021C.Y

# Project Proposal

Project name: Diyawara

SDGP Group No: CS-91

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# 1. Problem

## 1.1 Introduction to the problem

There are a lot of charity websites and societies in our country, but they all select random schools and help on their behalf. But there are so many needs that didn't get their attention or anything on their behalf that there is no platform to request help directly. They can request help from the TV channel, but their help is limited to a small scope because of the number of requests they get. On behalf of that, the only platform for posting their needs is social media, but there are lots of scams going on, so donors lose interest in donating because there is no guarantee that the request is genuine or not.

### 1.1.1 Problem background and stats

Many children cannot even prove their basic needs for their studies, like books, bags, etc. Millions of children are not getting school meals and children from one in seven households have already dropped out of school (Sunday Times, n.d). Furthermore, one in 10 households has admitted that their children will have to skip school (Sunday Times, n.d) if the situation worsens because their parents can't provide basic requirements for their children.

**Table 2: Availability of resources in government schools, by province and sector**

	Selected Provinces						Sector			
	Sri Lanka	Western	Northern/Eastern	North Central	Uva	Sabaragamuwa	Urban	Rural	Estate	
Good roof <sup>1</sup>	92%	98%	96%	85%	94%	82%	95%	93%	73%	
Good floor <sup>2</sup>	99%	99%	99%	100%	95%	100%	98%	99%	100%	
Divided classes in class rooms	44%	72%	27%	15%	37%	47%	71%	39%	60%	
Separate furniture for all students	60%	62%	28%	66%	58%	74%	53%	61%	71%	
Usable blackboards and adequate supply of chalk	72%	75%	70%	75%	69%	65%	75%	71%	82%	
Current teachers as a ratio of teacher entitlement	92%	97%	82%	89%	84%	93%	96%	93%	77%	
Student teacher ratio	22	20	31	18	21	22	24	21	29	
Sample size	429	77	99	30	30	42	85	329	15	

Figure 1: Availability of resources in government schools by province and sector (Arunatilake, 2005)

Even in Schools, they can't even arrange basic needs.

In Sri Lanka, pregnant mothers and early birth mothers are facing a lot of financial problems when it comes to nutritious meals and equipment needed for labor, with pregnant women needing Rs 16,000 (approximately USD 200) per basket with essential items (Srilankan Foundation International, 2004), so lots of Sri Lankan household can't afford that.

### 1.1.2 Examples in the problem

For example, if a student wants a pair of shoes but their parent can't afford them, the student may need to request help on social media or from locals. However, they are often ignored on social media because many scammers exploit these platforms. When a donor volunteers to help, the scammers may ask the donor to send money for the exact size of shoes they need. Examples like this have led to many people in Sri Lanka being scammed by fraudulent charity appeals.

Another issue is that many pregnancy-related items, such as maternity clothes and baby gear, are reusable. However, they are often disposed of because there is no platform for donating them. As a result, people are unable to find donors who can help them with these essential items.

### 1.1.3. Attempted Solutions of the Competitors

Feature comparison chart						
Features	Similar websites and organizations					Proposed solution (Idea) Proposed
	Global giving	Help school foundation	Help a child in Sri Lanka	karuna.lk	Greater giving Sri Lanka	
User sign in and create an account	√	√	√	√	X	√
Dual user interface for Verified & other Users	X	X	X	X	X	√
Direct item donations to individuals	X	X	X	X	X	√
Direct financial aid requests	X	X	X	√	X	√
Gig Posting and Management	X	X	X	√	X	√
Help Request Gigs by Verified Users	X	X	X	√	X	√
User Verification with ML-based Model	X	X	X	√	X	√
Partnering with Verified Individuals (e.g., Principals, Midwives)	X	X	X	√	X	√
Interest-Based Onboarding Questionnaire	X	X	X	X	X	√
Donation only based on school children	√	√	√	X	X	X

√ - Yes (This feature is available )

X - No (This feature is not available )

## 2. Proposed Solution

Our solution, Diyawara, is a web-based platform designed to bridge the gap between verified institutions in need - like schools, foster homes, and elderly care facilities - directly with donors and volunteering groups eager to support meaningful causes. Through a secure, transparent system, our platform addresses the critical challenges faced by both requesters and donors in the charity ecosystem.

### Key Challenges Addressed:

- **Lack of Trust and Verification:** Many donors worry about the legitimacy of the requests and hesitate even to make a donation since there is little to no form of verification that their contributions ever reach the intended recipient. Diyawara addresses this issue by validating the institution with trusted individuals such as school principals, midwives, and orphanage managers to ensure that the requests are genuine and high-impact.
- **Fragmented Donation Process:** Most of the time, institutions struggle to find a way to reach donors directly and vice versa, so they often depend on informal networks. Diyawara provides a centralized, user-friendly, and transparent platform where institutions can easily post their needs, and donors can post goods or food they would like to donate, simplifying the process and increasing outreach to a wider donor pool.
- **Transparency and Accountability:** Our system includes an AI model to smooth the process of connecting the requesting institutions and donors which are most suitable for them. Donors will know what their money is going towards, and the institutions can build trust as they provide feedback when the donations are matched.
- **Targeted Resource Distribution:** Diyawara makes it easier to handle urgent requirements without overburdening any one institution by classifying demands (For example, maternal care supplies for healthcare, instructional resources for schools, etc.).

## 3. Target Audience

### 3.1. Primary Validators

This platform utilizes a system of trusted validators to post authentic needs to ensure credibility and transparency. The validated characters focus on one key group in Sri Lanka.

- **School Principals** - Principals are responsible for advocating for student needs from financially challenged families, such as requests for educational materials, uniforms and meals. This approach guarantees that children in need have access to the resources they need, allowing donors to help directly to the particular parties.
- **Midwives** - Midwives are in charge of submitting requests for essentials for maternal care, such as child supplies, nutritional supplements, or medical assistance, for pregnant women who are at risk. Midwives play an essential role in providing focused support for maternal and infant health, especially in rural areas where healthcare resources are limited.
- **Orphanages** - Orphanages are key participants in posting basic needs for children who don't have parental support, including essentials such as clothes, school supplies and daily requirements. By facilitating community help through proven requests, the platform enables orphanages to build a safe environment for children who need help.
- **Shelters** - To improve the day-to-day life of elderly people who don't have family support, shelters can request basic essentials, such as food, vitals, and other day-to-day requirements.

### 3.2. Donors

- **Individuals and families** - Families and individuals serve as key contributors because a lot of people are looking forward to getting involved in charity work, and they are happy to support specific causes, like education, maternal health, child welfare and elder care. This audience wants to change the world by donating goods and money to help people who really need it.

### 3.3. Partner Organizations

In Sri Lanka, there are charitable organizations, such as Rotaract Clubs, the Sri Lankan Red Cross Society, and Sarvodaya Fusion. Partnering with these established organizations enhances the platform's ability to address a range of community needs effectively. Each organization brings unique strengths to society, from volunteer mobilization and emergency support to community welfare. Through these partnerships, the platform can ensure that donations reach the people who need them most.

## 4. Resource Requirement

### 4.1. Technology Stack

#### **Frontend:** *React, Tailwind CSS*

React is our frontend choice due to its component-based UI approach, vast documentation, support, and status as an industry standard. React also allows us to work flawlessly with an incredible CSS framework like Tailwind CSS. We will be creating the React web application using Vite.

#### **Backend:** *NodeJS with Express, PostgreSQL*

NodeJS with Express, with its status as an industry standard and thorough support, is a clear choice for us, and because of the nature of the different users for the app, a relational database is a viable option. For that, we have gone with PostgreSQL, a reliable open-source database

#### **Machine Learning:** *Pytorch*

We consider Pytorch a more beginner-friendly option because it is more 'Pythonic' than TensorFlow.

### 4.2. Software Stack

We will be using various sorts of software to build the web application.

Code Editors: VS Code, IntelliJ

Communication: Trello, Discord, Google Meet

Design: Figma



## 5. Features of the solution

The DIYAWARA charity website aims to connect donors with individuals in need (verified users), creating a platform for donating goods and services. DIYAWARA will feature distinct interfaces for verified and other users, offer a range of functionalities for posting and managing donation requests, and use machine learning( ML) and recommendation systems to Improve user experience. Below is a detailed description of the features included in the project.

- Dual User Interface for Verified and Other Users

Verified User Interface: This interface is designed for authorized (verified) users, who are individuals genuinely in need of assistance. It allows them to easily post donation Gigs for goods or services as they require.

Benefactor User Interface: Benefactor users, or Donors, who wish to contribute goods or services will have access to a separate interface tailored to their needs. This interface will allow them to view and respond to donation requests and create offers of goods or services they are willing to provide.

- Gig Posting and Management

Donation Gigs by Benefactor Users: Donors will have the ability to post donation gigs, specifying the goods or services they are offering to donate. These gigs provide visibility to verified users, who can then request or accept these donations.

Help Request Gigs by Verified Users: Verified users who are seeking assistance can post gigs that describe their specific needs. These gigs serve as a request for help, allowing other users to find and support them by donating goods or services.

- Partnered Donation Clubs

Simplified Process through Partnered Clubs: Donors will have the option to work with pre-approved donation clubs, simplifying the process of giving. These clubs serve as partners in the donation process, facilitating the distribution of goods and services to verified users in need.

- User Verification

Verification Process for Verified Users: To ensure the integrity of the platform, an ML-based verification model will be implemented to confirm the identities of verified users. This process ensures that only legitimate individuals in need are designated as verified users, creating a reliable platform for donors.

- Onboarding Questionnaire for Other Users

Interest-Based Onboarding Questions: During the registration process, Donors will be presented with a series of questions to help determine the types of donations they are interested in. This data will be used to customize their user experience and inform the recommendation system, enhancing the relevance of gig suggestions they receive.

- Recommendation System for Personalized User Experience

Personalized Recommendations for Other Users: A recommendation system will be utilized to enhance the user experience. Based on their activity and preferences, the system will recommend verified user gigs that align with their interests, helping to match donations with needs more effectively.

These features are designed to produce a flawless, effective, secure, and trustworthy platform for both benefactors and donors, exercising advanced technologies to ameliorate stoner relations and support genuine, vindicated charitable benefactions.

# References

Arunatilake, N. (2005). Education participation in Sri Lanka—Why all are not in school. *International Journal of Educational Research*, 45(3), 137-152.

<https://doi.org/10.1016/j.ijer.2006.11.001>

www.srilankafoundation.org. (n.d). *Essential Items for Pregnant Women* | *Sri Lanka Foundation*. [online] Available at:

<https://www.srilankafoundation.org/essential-items-for-pregnant-women-in-sri-lanka/>.

Print Edition - The Sunday Times, Sri Lanka. (n.d). *Millions without meals, children skipping school*. [online] Available at:

<https://www.sundaytimes.lk/221023/news/millions-without-meals-children-skipping-school-499785.html>.

Anon, (2023). *Think of the children in Sri Lanka's economic crisis* | *East Asia Forum*. [online] Available at:

<https://eastasiaforum.org/2023/07/19/think-of-the-children-in-sri-lankas-economic-crisis/>