

# dOnatio: The life-line

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**Abstract** - The traditional way of collecting donations was to go around the whole city in search of donors. This way of working generally comes with chances of donating to fraudulent organizations. This is one of the reasons because of which people refuse to come forward to do charity. By using the proposed web-application, the donor is guaranteed that the donation made by them reaches to the right place, at the right time, to the right person, as only authentic and government acknowledged organizations are allowed to register. A recommendation system and a search engine can be used by donors to obtain charitable trusts and organizations. The Support Vector Machine (SVM) algorithm will be used to match a donor with suitable organizations based on the type of donations that can be made.

**Key Words:** Web-application, recommendation system, Search engines in websites, Support Vector Machine.

## 1. INTRODUCTION

We all have old books, pieces of furniture, clothes and other household stuff that are lying somewhere in the corner and getting dusted. Its high time to donate these things to those in need and make a change. dOnatio provides a simple, user-friendly and trustworthy approach to do charity. It reduces the overhead on the user of verifying the trust's authenticity or traversing the whole city to donate or collect the donation. Just schedule a pickup and the donation will be collected from your doorstep.

It replaces the traditional way of doing charity by providing an e-charity platform. This web-application validates the organization through the help of a portal run by government agencies which contain a list of affiliated NGOs.

Fig-1 explains the basic layout of a donor's activities. The donor has to initially register to the website and add stuff he/she wants to donate. Schedule his/her pickup details and the deal is done.

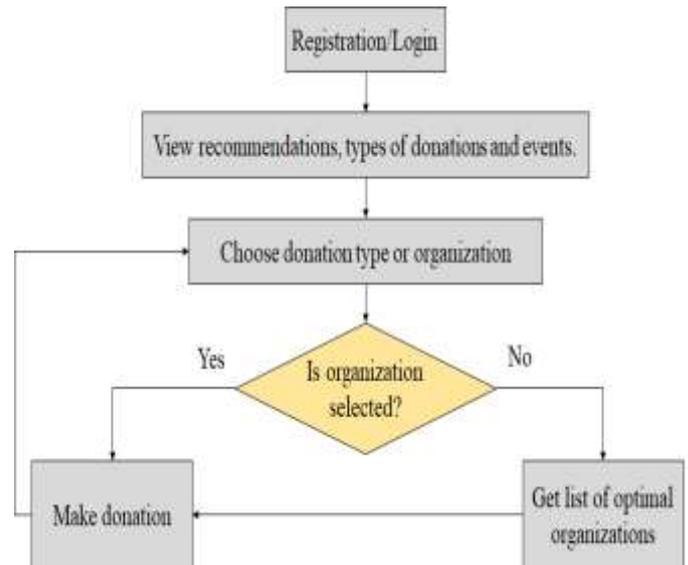


Fig -1: Flowchart of Donor

Similarly, the organization has to register itself and its authenticity is checked and validated. It can go through the list of donations and choose what it needs. dOnatio will deliver it to their doorstep. Fig-2 gives the trust's basic activities on the web-application.

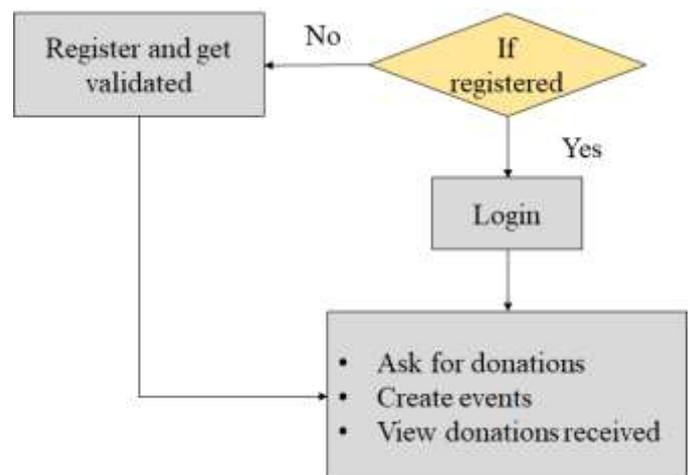


Fig -2: Flowchart of Organization

## 2. LITERATURE SURVEY

### 2.1 Relevant Works

sadsindia.org is an on working website that works similar to dOnatio. A donor can register and upload things they have to donate. Organizations can view these donations and place order for them. sadsindia delivers the donated stuff to the organization. The major drawback here is its non-transparent module for organizations registration. In sadsindia, the organization has to send a mail to the admin first to register and then follow the instructions provided to them. Due to which, the donor is unknown to the idea on what basis organizations are added and if he/she can rely on it.

Similarly, an android application named "Go Donate" performs the same task as dOnatio but fails to validate the authenticity of the charitable trusts. It also doesn't give an option for home deliveries of donations.

### 2.2 Verification of NGOs

The NGO DARPAN has been maintaining under aegis of the NITI Aayog. NITI Aayog invited all of the Voluntary Organizations (VOs) and the Non-Governmental Organizations (NGOs) for registering in the portal. This portal enabled all the VOs/NGOs in India to enroll and hence facilitated the creation of a repository of information about VOs/NGOs, Sector/State wise.



Fig -3: NGO Darpan

The portal provides VOs/NGOs to get a unique system generated ID when signed. This unique ID is required to register for grants under a variety of schemes of Ministries/Departments/Governments Bodies. It is used to check the authenticity of organizations that want to register with dOnatio.

### 2.3 Machine Learning

It was found from [1] that machine learning algorithms give better results compared to statistical imputation methods (normal mathematics formulae when applied). The different methods of machine learning are supervised learning, unsupervised learning, semi-supervised learning and reinforcement learning [2].

A supervised learning algorithm is trained using labelled examples, like an input where the output is already known. According to [3], a supervised machine learning algorithm aims at categorizing the data from the prior information. Many techniques are proposed for solving such problems:

- Instance-based techniques
- Stochastic techniques
- Rule-based techniques
- Logic-based techniques

### 2.4 Matching a Donor with an Organization

[4] gives a little counsel for suggesting an algorithm to implement which gives the best results for the problem at hand using meta-learning. This uses three types of data characteristics:

- Simple
- Information theoretic
- Statistical

It was found that Support Vector Machine provides the best results.

### 2.5 Recommendation System

Recommendation System is a study area that is quickly progressing. In [5], recommendation engines are mostly of three classes:

- Collaborative Filtering
- Content-based Filtering
- Hybrid Recommendation system

[6] recommends different online courses for a student based on his/her previous courses attended and current interest. This system falls under the category of collaborative filtering. The same can be applied by

replacing courses with the type of donations and students with the donors.

## 2.6 User Interface

Designing interactive applications is still a challenging task for application developers using a large number of user interface (UI) technologies and toolkits that exist today. An efficient approach to handle this is task-driven software development. [7] describes an application based on a task model and task model consists of tasks which the user, the system, or the user and the system should perform in order to achieve a particular goal.

Task model consists of:

- Control flow with hooks for dialogues and function calls: Only this can be transformed into executable code.
- The initial version of the application's UI: Lacks in layout definitions and usability optimizations.
- Code skeleton: Partial implementation of the application logic which must be completed by writing code for algorithms, database queries, etc.

## 3. METHODOLOGY

### 3.1 Index Page

The index page is the home page that is automatically loaded by a browser when the URL of web-application is given. Particulars of dOnatio, list of the registered organizations and events being conducted by different organizations are put up here. The public can review this page to find out what we do.

### 3.2 Donor Login and Enrollment

Anybody willing to donate can register and login to dOnatio either by creating a user-id or by using social media. Details like address, contact number, email-id must be provided as they are essential to connect with the donor and receive donations. To secure this information, details can be encrypted using any of the standard encryption techniques like 3DES, SHA256 etc.

### 3.3 Donor's Dashboard

After a successful login, a donor can view different organizations that have been registered with dOnatio and need donations. They can also be recommended using the recommendation system, or filtered and searched by the donor himself.

A search engine that will use a few SQL queries will be used to give a donor the opportunity to pinpoint

organizations of his/her desired interest. A donor may scrutinize the requirements and interests of the organization also.

### 3.4 Recommendation System for a Donor

A recommendation system will be used to list out the organizations that require donations that were made by a donor before. A system proposed in [6] will be used to match rate a donor's interest in all types of donations.

The system will obtain a rating of every donor with every type of donation that can be made. We can now recommend for each donor, (the organization in need of these donations) in the descending order of the rating obtained. This rating will be computed repeatedly as the donations made will change over a duration of time.

For example, suppose a donor has donated a lot of books before and a few sets of furniture, organizations that require books will be put up first and then the ones that require some furniture. Suppose now the donor has donated a few clothes as well, a few organizations that require clothes will be recommended the next time.

### 3.5 Organization Login and Verification

An organization willing to register with dOnatio must fill in details like the number of people in the organization, the type of work they do must be provided along with the basic information. Every organization must provide the certificate code of the government certificate along with other details of it during its enrollment with dOnatio. The organization will be corroborated using a web service that accesses NGO Darpan mentioned in Fig-3.

### 3.6 Organization's Dashboard

An organization may ask for the donations it requires by filling up a form. Every organization will be provided with a portfolio that can be maintained and managed by them to showcase the events it conducts, different facilities provided to the destitute. It will also be able to view the donations it has received previously by different people.

This dashboard can be managed by anyone that the organization trusts. The details of the manager can also be provided in the portfolio.

### 3.7 Matching a Donor with an Organization

The main agenda of dOnatio is to connect and bridge the gap between donors and the condign organizations. A machine learning algorithm will be used to pair the best possible organization based on the type of donation that a donor would like to make.

Support Vector Machine (SVM) was found to be the best algorithm to classify the datasets of small sizes. SVM is also known to classify best when the labels are only two. This model classifies a set of features as a match or not.

The donor when selects the type of donation, he/she is allowed to enter the quantity of donation which is matched with the organization's needs.

Every organization that requires the type of donation selected by the donor is taken and its quantity and the distance between the two are retrieved. The nearest distance between donor and matching organization is determined using google maps API.

For example, suppose a donor wishes to donate 20 clothes, all the organizations that would require around clothes will be selected. The distance between this donor and an organization are found.

The donor quantity, organization quantity and the distance are given as the features for which the SVM will predict if there is a match between them. A list of matched organizations is given to the donor.

The donor may then choose to donate to any one of these matched organizations in the ascending order of the distance. The organization picked by the donor will be paired with him/her and will be appended to a list of mapped donors and organizations.

### 3.8 Admin Portal

Every web-application contains an admin dashboard that is used to maintain the web application and the database. dOnatio's admin portal will contain the list of paired donors and organizations. This list will be used to collect to the donations from the donor and deliver them to the respective organization.

A notification will be sent to the donor and the organization prior to the collection and delivery of goods. Once the delivery has been made, this entry will be removed from the list of mapped donors and organizations.

The admin is also given the predictions made by the classifier. He can check the classifier and modify the dataset if necessary.

## 4. CONCLUSION

A web-application implemented using a recommendation system [6], search engine, and support vector machine (SVM) [3][4][9] collectively will provide an effective and efficient way for charity.

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