SMART INDIA HACKATHON 2022

SHRI GURU GOBIND SINGHJI INSTITUTE OF ENGINEERING AND TECHNOLOGY (SGGSIET)

TEAM PAVVVFECT_

PROBLEM STATEMENT

Mechanism to help rural people to self select for receiving benefit offered under government scheme

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ABSTRACT

Mechanism to help rural people to self select for receiving benefit offered under government scheme:

The rural residents of India are unaware of various schemes offered by the Government of India for which they are eligible. To solve this problem we came up with a solution of developing a multilingual Whatsapp Bot(Yojana Sarthi) which will recommend the rural citizen about the schemes as per his/her eligibility and their information will be shared with respective government agencies..

Whatsapp bots are based on Whatsapp business accounts which allows the business account holder to automate messages as per the ease of user. We are going to implement this facility to take input from users and provide an interface to them.

Yojana Sarthi can be accessed only when the user has the Whatsapp number of the bot which will be provided through various modes of communication.

- Once the number is saved by the user , they will have to send some message(such as 'Hii') to initialize the bot.
- Once the bot is initialized, the user is supposed to upload his/her basic documents (such as aadhar, ration card, income certificate, caste certificate, etc.).
- The data from the uploaded documents/images will be extracted with the help of OCR(Optical Character Recognition).
- After uploading basic documents, the bot will send the main menu interface with multiple options such as Get Schemes, Know More About Scheme,Add User, Switch User , User List , Change Language.
- The schemes will be recommended to the user according to their eligibility. User will be offered a choice of schemes. After the user selects the scheme which they want, their information will be automatically sent to the relevant authorities after which government agencies will contact the user.

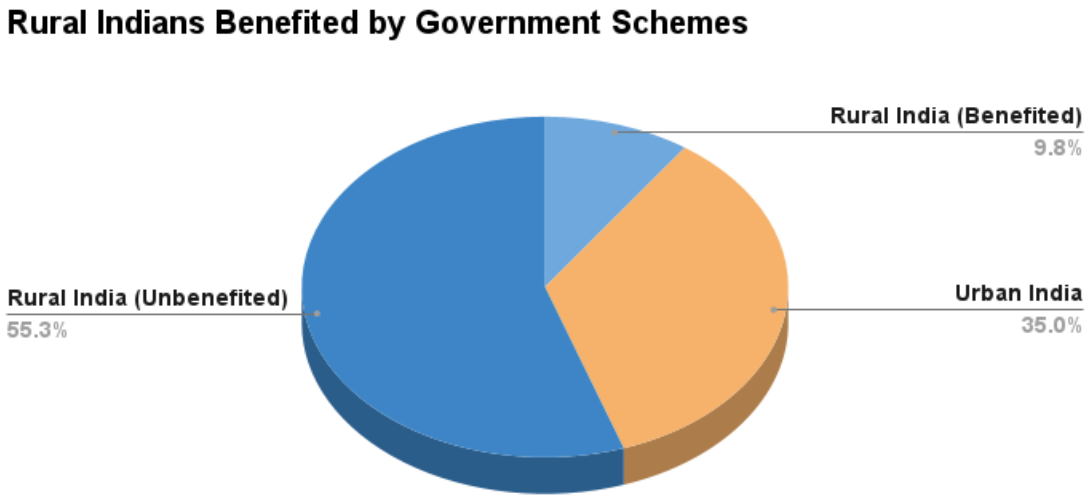
Contents

1 Introduction

In existing scenario, the approach followed for beneficiary's selection for various schemes is top down. All rural development programs/schemes aim at extending maximum benefits to rural poor. Assessment of eligibility is done by various officials assigned at Centre/States etc. The current system requires:

1. Beneficiary first has to visit area-specific centres.
2. Get information about the eligibility.
3. Visit again with the documents for the schemes to apply for the scheme.
4. Stay in contact with the centres to get updates (of in-process and new schemes).

Thus, a system is needed where the beneficiary can get selected into schemes and offer himself to tracked using unique identifier.



The schemes announced by ministries of India can be easily shared to the individual residing in the rural areas using **the multi lingual WhatsApp bot** developed by us. The use of the WhatsApp application has grown exponentially in the rural areas of India. The application has become **quite easy to use** for almost all sections of the rural society of India. The bot will **recommend the schemes** suitable for a particular individual as well as share all the schemes based on the information extracted from documents (such as Aadhar, income certificate, caste certificate, ration card etc.) provided by the beneficiary **using OCR (Optical Character Recognition)**. **Integration of speech recognition** enables user to record audio message instead

of typing. For vast reach of the application, we are providing options of multiple regional languages so as to remove language barrier. The Whatsapp bot will also provide the **step by step guide** to register for the scheme.

2 Objectives

2.1 Awareness

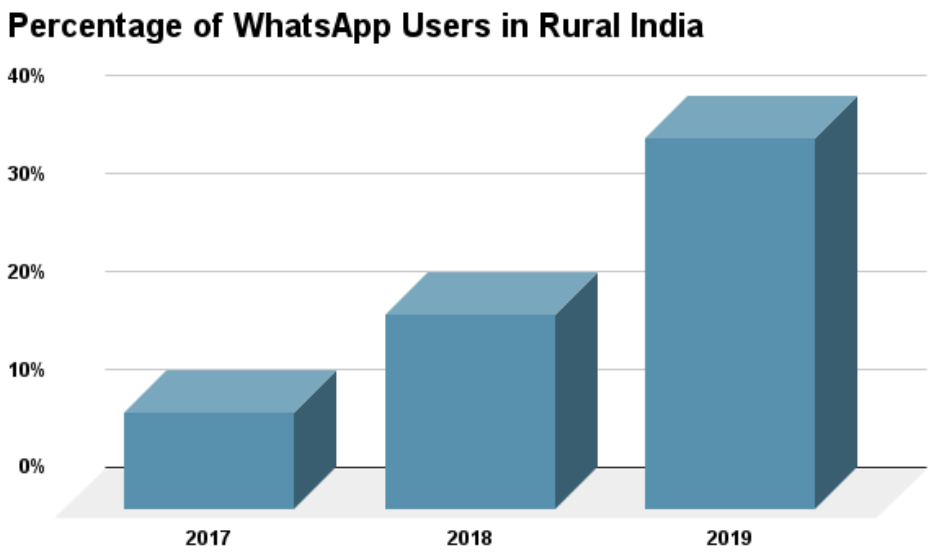
Due to lack of awareness among rural poor, they are missing most of the schemes and not been able to take benefits. Our solution extends the limits of current system and takes schemes to every house in any corner of India. Provision of steps and all requirements information will help rural citizens to get all the benefits provisioned for them by the government.

2.2 Ease of Use

One third portion of rural citizens of India is illiterate. People residing in rural area are aware of usage of mobiles and various social media platforms but are not able to operate and use complicated government websites. Inability to read and write demotivates them from using government websites and get benefits. Our solution surpasses language barrier, reading-writing barriers and comprehending complex user interfaces of government websites.

2.3 Reach

Our solution makes use of platform (WhatsApp) that is used in all classes in India. Usage from poor to rich people gives our solution a vast reach. Using service of such application which is used by **38%** of rural Indians gives us edge in high reach.



3 Features

- Solution is **user friendly and built on widely used platform**.
- Even technically literate user can not operate government websites smoothly, which is simplified by our solution to make it **easy to be used by even people living in rural area**.
- Our solution provides **multilingual interface** which surpasses the language barrier between the end user and government websites which are primarily written in English.
- End user **do not need to know how to type and can record audio message** and provide the instruction to the chat bot.
- Efficiency of WhatsApp makes our solution **independent of fast internet connectivity**.
- User will only have to **send the pictures of the documents** to our WhatsApp bot and will directly get the government schemes/scholarships which are best fit for that particular user.
- **Not** limited to **only one user**. Multiple users can have benefits from single WhatsApp number.

4 Terminologies

OCR (Optical Character Recognition)
Optical character recognition is the electronic or mechanical conversion of images of typed, handwritten or printed text into machine-encoded text, whether from a scanned document, a photo of a document or from subtitle text superimposed on an image.

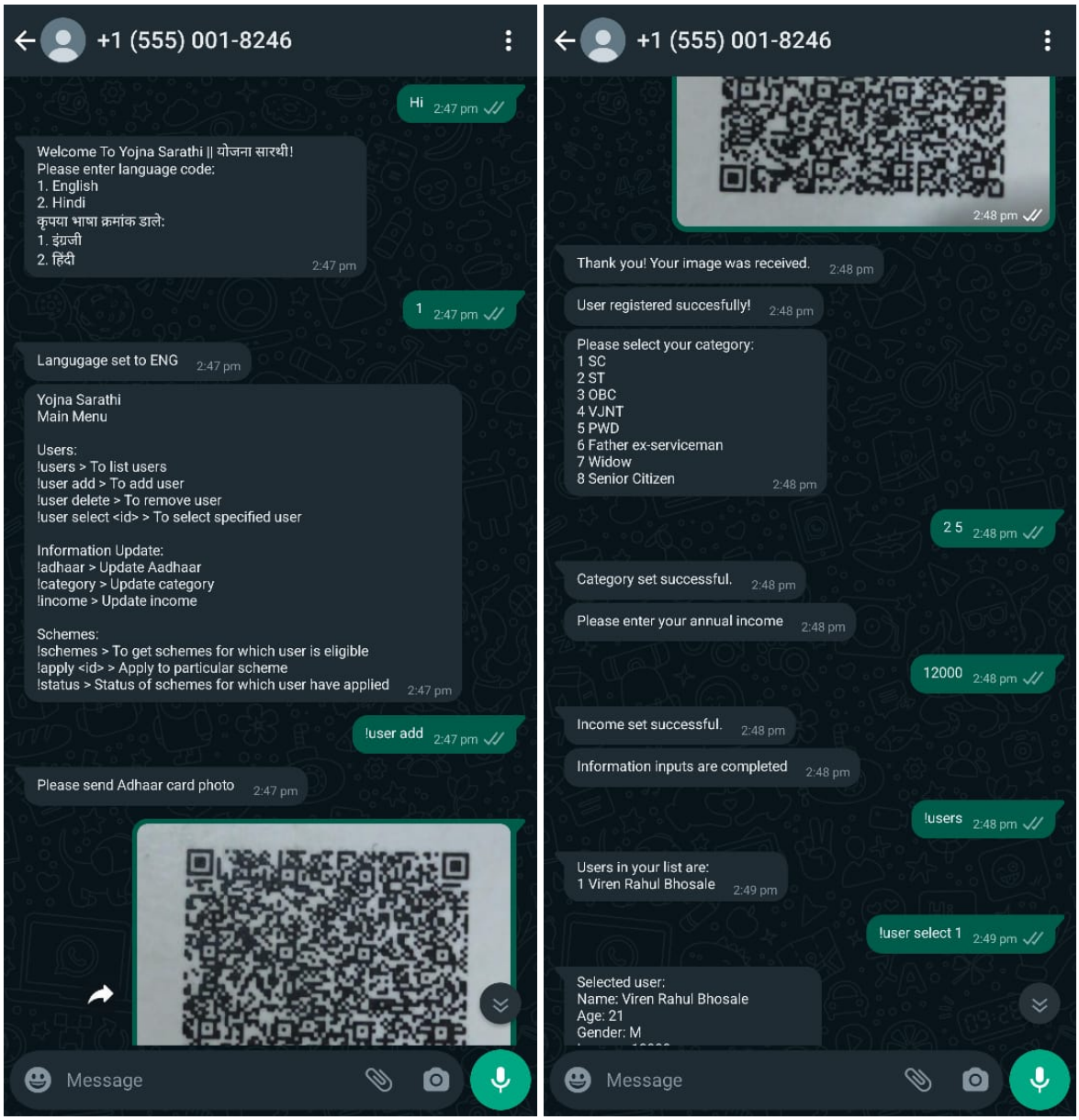
Speech Recognition
Speech recognition is a machine's ability to listen to spoken words and identify them. You can then use speech recognition in Python to convert the spoken words into text, make a query or give a reply. NLP (Natural Language Processing) allows processing of audio messages sent by user.

5 Process

- Our WhatsApp bot can be accessed only if the user has WhatsApp number of the bot (which is basically a business account). For that purpose number of our bot will be provided either on social media or through word of mouth or the button to the bot will be provided on the government schemes' website.
- Once the user has saved the phone number, they will have to send some message (e.g. "Hi") to the bot and the bot will be initialized and will ask for language choice from the user.
- When the bot is initialized, it will ask for basic documents (aadhar card, ration card, BPL/NCL certificate, etc.) from the user. Using OCR (Optical Character Recognition), we will extract data (social status, financial status, age, gender, etc.) from the user and save it in our database to recommend schemes. There will be provision of verifying and re-correcting information recognised using OCR.
- After getting data from user, our bot will show its Main Menu interface which will be consisting options as:
  - Get Schemes
  - Know More About Scheme
  - Add User
  - Switch User
  - User List
  - Change Language
- All the functionalities will follow specific syntax which will be provided for the users when they use it. E.g. if user wants to selects Know More About Scheme, he will have to follow convention as 'KMAS scheme_code'.
- To select the options provided by bot, user can either enter number (e.g. if user wants to select option on number 1 he will send 1 to the bot) or he can simply type it (e.g. Know More About Scheme scheme_code.
- When user provides input, our bot will communicate with the database (PostgreSQL) through back end (Flask) and will return requested data as response and the response will be sent as message on WhatsApp to the user.
- To make the interaction easier we are giving option to record the audio message and send to our bot, so that user do not have any need to type.

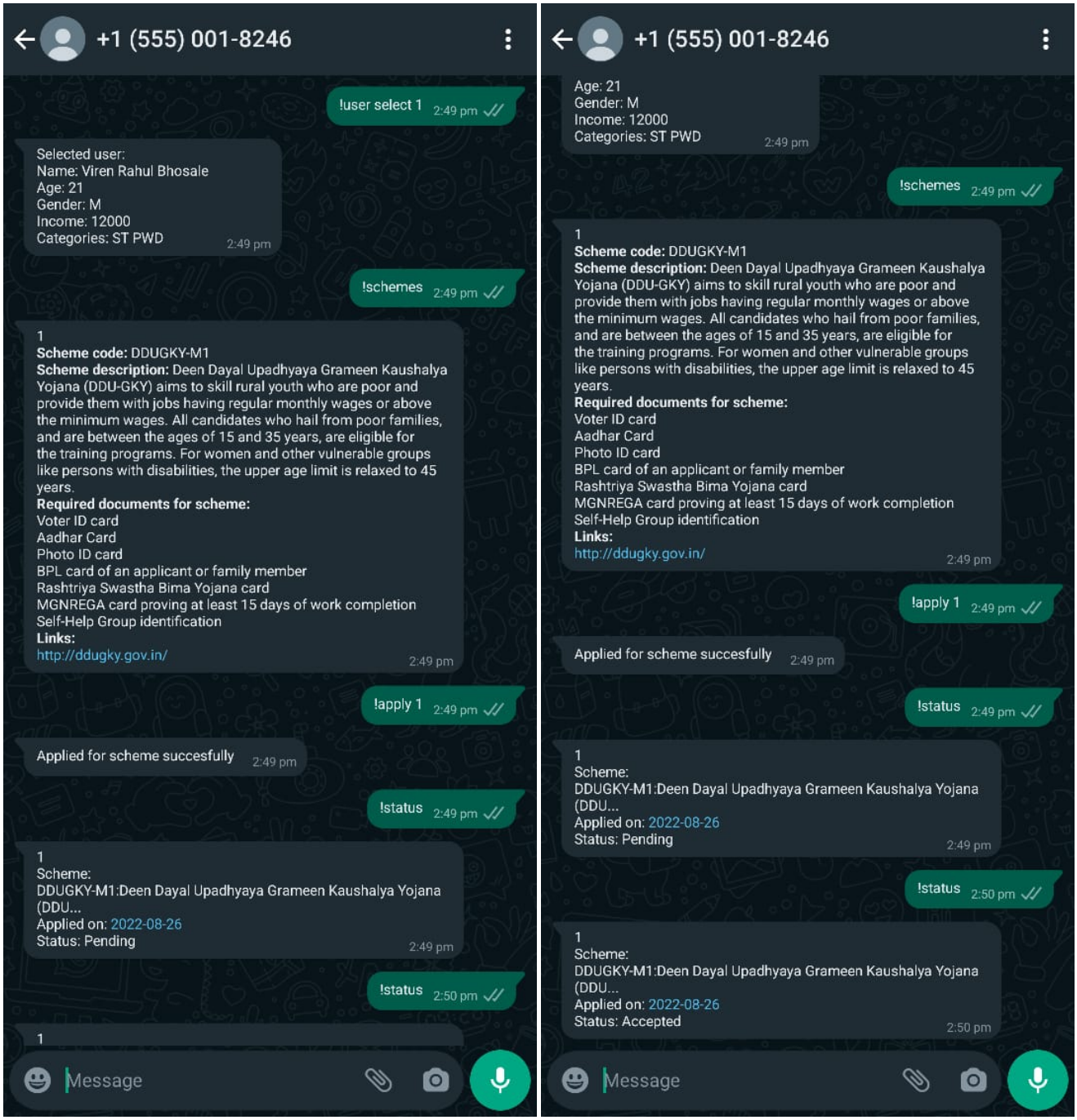
- Our bot will be available in regional languages, making user experience hassle free and easy to understand.
- Facility to add users will allow user to know about schemes for more than one person from same mobile phone.
- If the age of the user is detected to fit in scholarships' bound, various age specific scholarships will be recommended from the bot.

6 Screenshots of Our Prototype



As of prototype, we took images of the Aadhar Card from the user (so the process of taking inputs is eased) and got data such as gender, date of birth and place to give schemes as output. We are not bound to take Adhaar cards but the documents that any government authority will ask the beneficiary for the scheme's documentation. The last option will always be there i.e. to get inputs by typed text.

Once these details are asked, the querying of the user data into our sample database initiates and all the eligible schemes are queried and sent to the user.


+1 (555) 001-8246
!user select 1 2:49 pm
Selected user:
Name: Viren Rahul Bhosale
Age: 21
Gender: M
Income: 12000
Categories: ST PWD
2:49 pm
!schemes 2:49 pm
1
Scheme code: DDUGKY-M1
Scheme description: Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) aims to skill rural youth who are poor and provide them with jobs having regular monthly wages or above the minimum wages. All candidates who hail from poor families, and are between the ages of 15 and 35 years, are eligible for the training programs. For women and other vulnerable groups like persons with disabilities, the upper age limit is relaxed to 45 years.
Required documents for scheme:
Voter ID card
Aadhar Card
Photo ID card
BPL card of an applicant or family member
Rashtriya Swastha Bima Yojana card
MGNREGA card proving at least 15 days of work completion
Self-Help Group identification
Links:
http://ddugky.gov.in/
2:49 pm
!apply 1 2:49 pm
Applied for scheme succesfully 2:49 pm
!status 2:49 pm
1
Scheme:
DDUGKY-M1:Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU...
Applied on: 2022-08-26
Status: Pending
2:49 pm
!status 2:50 pm
1
Message
+1 (555) 001-8246
Age: 21
Gender: M
Income: 12000
Categories: ST PWD
2:49 pm
!schemes 2:49 pm
1
Scheme code: DDUGKY-M1
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Links:
http://ddugky.gov.in/
2:49 pm
!apply 1 2:49 pm
Applied for scheme succesfully 2:49 pm
!status 2:49 pm
1
Scheme:
DDUGKY-M1:Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU...
Applied on: 2022-08-26
Status: Pending
2:49 pm
!status 2:50 pm
1
Scheme:
DDUGKY-M1:Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU...
Applied on: 2022-08-26
Status: Accepted
2:50 pm
Message

7 Existing Systems and Why Is Ours Better

- There are existing government websites that give information about schemes, but they are not user friendly.
- Our solution provides user friendly and easy to access platform for beneficiaries.
- Our system will recommend the schemes according to various details (socio-economic condition) provided by the end user.
- User does not need to put much efforts by typing the message. Instead of it, they can record voice messages and get required information.
- User don't need to fill any forms but upload documents and the information will be extracted from image/pdf from user's documents using OCR.

8 Future Scope

- We will build multi-platform application (using native development technologies) which will increase the reach of our solution.
- The application will be having totally voice based interface which will give user hassle free experience.
- If government allows usage of their databases and authentications, we can take documents from users and using OCR we can take data from user and directly register for the particular scheme which user selects.
- We can add AI/Ml in the WhatsApp bot to further enhance the the capabilities of making the recommendation to the users.
- This whole process can be simplified using single input i.e. Aadhar card number.