How to Cite:
Laxmi, B. P., Jasmine, R. R., Vignesh, S., Rohith, K., & Bharath, V. (2022). Automated solution for waterlogging problem. *International Journal of Health Sciences*, *6*(S4), 4147–4154. https://doi.org/10.53730/ijhs.v6nS4.9057

Automated solution for waterlogging problem

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***Abstract*---**Water logging until now is the major problem during the rainy season. Those with the sensor can utilize this solution, since it is completely independent and not common to everyone. Water logging monitoring system thereby offers the solution for an efficient, cost-effective water logging system. In this project, we are proposing an automatic water monitoring system, WE, which checks the level of the water in the user by means of a camera. This camera captures the user's water level. If the water level in the area rises, the notification will be issued to surrounding NGOs and the municipality in that particular region. So that the water in the region can be eradicated. Another aspect of our project is that individuals who need any food, medication or habitat may make requests and notifications are sent and delivered to the relevant NGOs.

***Keywords*---**water logging, sensors, municipality, NGO's.

Introduction

It is important that water levels are detected in real time in rivers or streams in metropolitan areas, as water represents a permanent hazard to the human community. Floods are responsible for death, crop destruction and property. With the increasing global warming, recurring floods and heavy precipitation are experiencing many regions of the world. Floods deaths are typically linked with over-running, leading to flash flooding. The catastrophic nature of the floods and flash floods makes it obvious that water levels in rivers and streams need to be constantly monitored. A cost-effective, automated and minimal maintenance system would be appropriate.With the improvements in computer vision, machine education, artificial intelligence and advanced computing, it is necessary to implement algorithms on cost-effective computers at data- generation sites. In this project we used the picture of the river to identify changes in the water level in the stream automatically with low errors.

- Efficient in terms of cost, time and accuracy.
- Provide real-time solution to the people and manage the water logging problem more effectively.
- Improvising the method to eradicate the water in a simple way.
- Ensuring effective service.

Objective

- To develop an automated solution to solve the water logging problem.
- The solution to use a mobile app to solve the issues faced during water logging.

Scope

- The camera captures the amount of water present around the house and sends the text notification to the municipality and nearby NGO's.
- It helps people to meet the basic requirements like food, clothing, shelter and medicine.
- This water logging problem causes severe problems during rainy season, after the problems we faced during these situations we choose to find to this problem.

Literature Survey

Chandra Prakash Meher suggested the IOT-based system for irrigation and water logging utilising Arduino and Cloud Computing. In a Peninsula like India, agriculture accounts for over 16% of the overall GDP, making the system of irrigation of economic growth quite important. The purpose of this article is to promote a wireless sensor, cloud computing and IoT network in irrigation by delivering enough water to crops and save the surplus runoff from the agricultural lands at the correct moment. Water is the standard way to use traditional water. In a tank for future use, surplus runoff water is stored. As there is a large water shortage on Indian coastal belt, agriculture remains as stony

ground from the month of March to May. This technique enables the crop to rotate as water is provided from the river water that is stored.

It is designed to automate the irrigation process through soil moisture, moisture and temperature monitoring. Arduino Uno is a microcontroller that monitors the conditions of sustainability of crops to provide enough water and improved agricultural production. It also enables the farmer to control the agricultural land that remains far from this site. The farmer may also anticipate the amount of water needed in the next several days by utilizing the IoT technology. The moisture sensor, temperature sensor and humidity sensor are used on the outskirts of the field which senses the conditions in the environment and sends those data to a local wireless server.

Adriaan Van Niekerk suggested a method of salt accumulation and water logging monitoring. The objectives of the strategy leading to the construction of the Salt and Water Accumulation Monitoring System (SAWMS) were: 1. Developing a system that analyses multi-time (current and historical) satellite images automatedly to identify fields within cultured areas that are likely to be affected by the accumulation of water or of salt; 2. Provide information to end-users about areas which are water-logged and salt- affected by web-based development and implementation; 4. Enhance the system using user input and offer national implementation suggestions.

V K Choubey proposed that water logging be detected and delineated using remote sensing methods. Implementation of irrigation projects without proper drainage has disturbed the balance between groundwater recharge and outflow, which has resulted in an accretion to the groundwater table in India's command regions. The Tawa region suffers the water logging problem caused by irrigation and drainage from the canal system.

This investigation was carried out with the IRS-1 A-LISS-I dala to identify regions logged in the Tawa command. The Tawa command was also drained utilizing the IRS-1A-LISS-I, FCC from november20, 1989 and 23 March 1989 Land use and drainage maps. In order to identify locations affecting water logging and those that are susceptible to water recording, IRS-LISS-I Digital Data (CCT's) was analyzed from May 19, 1988, October 19, 1988 and November 20, 1989. The IRS calculated waterlogged area has been attempted to validate with the water table depth data that are accessible.

Proposed Methodology

Methodology

To develop an automated solution to solve the water- logging problem through the analysis of captured images of logged water at any location. The solution also uses a mobile app to solve the issues faced during water logging. Software Requirements are, we used python language to code the solution for our problem. IDE is Jyupter. For database connectivity we used Firebase. Hardware Requirements are, we used CCTV camera to capture the image of the water logging.

Module

Login/Registration

After you confirmed that it matches the password to enable a mistake dialogue in the app and display a message to the user, you'll be able to login page for users with id and password.

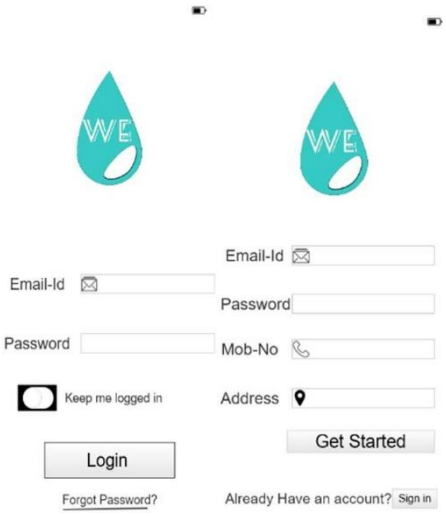


Fig: Login or Sign-up

Water level detector

Water level will be detected by using images captured by cameras. The technology used behind this process is IMAGE PROCESSING.

Fig: Water Level Detection

Get Help

People who need help like food, clothing, medicine during waterlogging problems or during any disastercan make use of this feature in our application.

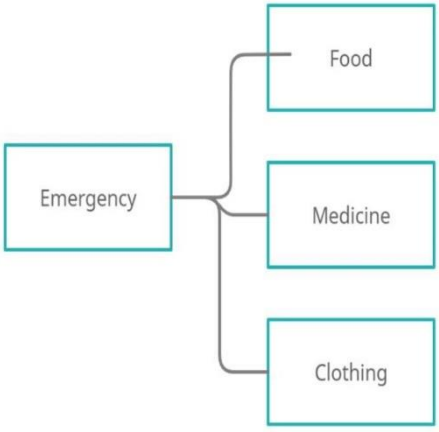


Fig: Get Help

Sos Emergency

Current countries emergency issues like Police, Fire, Ambulance, women's security numbers, etc. are also provided by emergency applications. The action button, the phone Power button and the SOS button will enable you to initiate distress.

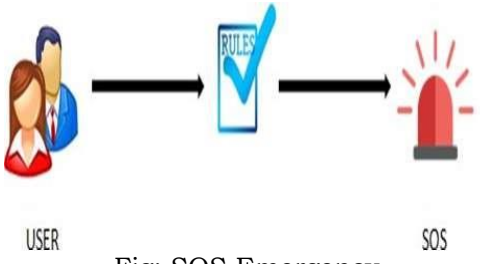


Fig: SOS Emergency

Architecture Diagram

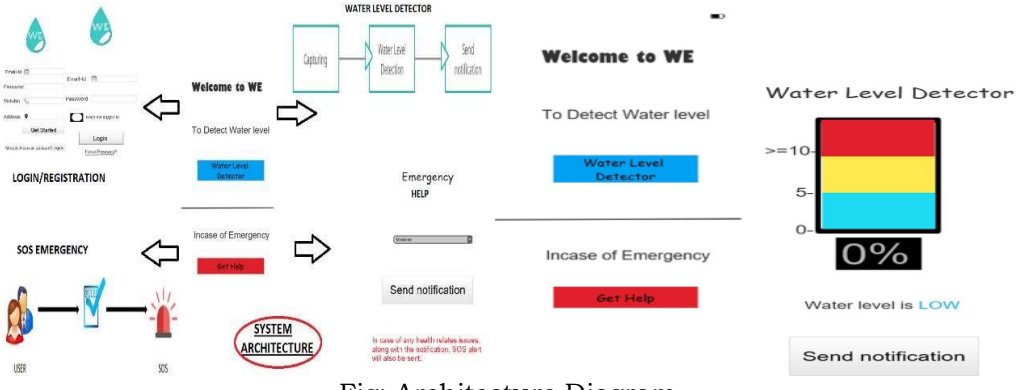
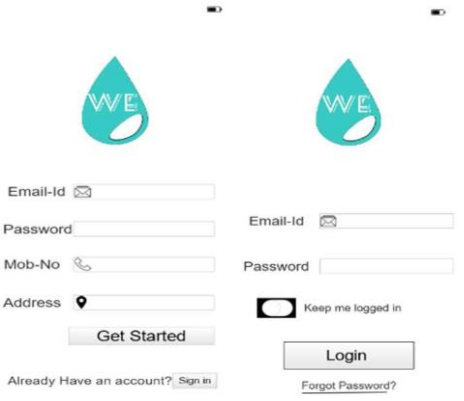


Fig: Architecture Diagram

The Water logging system helps the people in many ways, initially they need to login or signup into the system by entering their details. After logging in the user's locality details will be shown (i.e) level of water in that area. If the water level is high the notification is sent to the area municipality or the nearby NGO's and the water will be eradicated by them. Another feature is used during emergency period when a person needs food or medicine or clothing, he/she may get the help from the nearby NGO's.

Results and Conclusion

The results and conclusion are as follows:



If the user is using the system for first time, he/she should register with all of the above details to create an account for them. After creating an account, they will be asked to logged in and they will move to the main page. So, the main page has two options like Water Level Detector and Get Help options. If the user clicks on the Water Level Detector Option, he will be shown a bar diagram indicating the water level in his/her locality. If the water level is high the locality will be marked in red colour and if the locality is having medium level of water, it is denoted in yellow colour. And if the locality is having low amount of water it is denoted in blue. And in below there is a send notification button available, by clicking on that button the notification will be sent to the nearby municipality and the nearby NGOs, so that the water will be eradicated in the user's area.

Fig: User area's Image

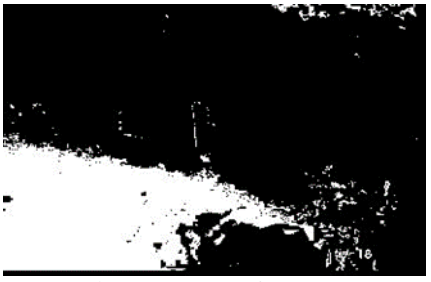


Fig: Processed Image

By getting the image of the water in user's area the given image is processed using Image Processing, a python code is used for processing the image. And the level of water in that area is got, and it indicates whether it is safe or unsafe for the user to be in that area. The water will be in white colour in the processed image.

If the user clicks Get Help option in the main menu, they will come to this page. This page consists of Emergency options like Food, Clothing and Medicine. If the user clicks on any of these options, the user's details will be sent to the nearby NGO's who will come and help the user in the given problem.

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