Poster:Re-designing Drainage System to Solve Water Logging Using Cloud-Based Mobile Application

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1. INTRODUCTION

Water logging has been disrupting livelihoods of about one million people in Bangladesh during past two decades. The capital city Dhaka faces extensive water logging during the monsoon (May to October) as a regular phenomenon due to fast and uncontrolled urbanization. This is creating adverse social,physical,economic and environmental impacts in the life and living in Dhaka. Not only that,this problem has also been persistent in some big cities of India (i.e,Kolkata) [3]. In this work, we propose a cloud-based mobile solution to redesign a city's drainage system to solve the water logging problem. For our case study, we chose Dhaka as our first city to try the proposed application.

2. BACKGROUND AND RELATED WORK

Earlier there has been extensive research on water logging in Dhaka city [2]. These studies have a brief description on the current situation of water logging but there is still the need of a solution. for making this problem not persistent anymore.Our proposed solution has the application of user-data along with an algorithmic approach.

3. APPROACH AND UNIQUENESS

Our proposed solution leverages proper estimation of water clogged upon which measures can be taken alongside re-designing the drainage system all over the city.

Step 1: We have collected data of water logging events from the user survey via mobile application. Data include the height of logged water as well as the garbage level at different points of the city. From these data,we can almost precisely measure the amount of extra water (in volume) that needs to be extracted from a particular area. These areas are determined by using convex hull algorithm.

Step 2: The Govt. has a placement map of pipelines of the city with proper measurements (i.e. length, radius etc.). To accommodate all the water in a certain pipeline,the change in the pipeline measurements is calculated.

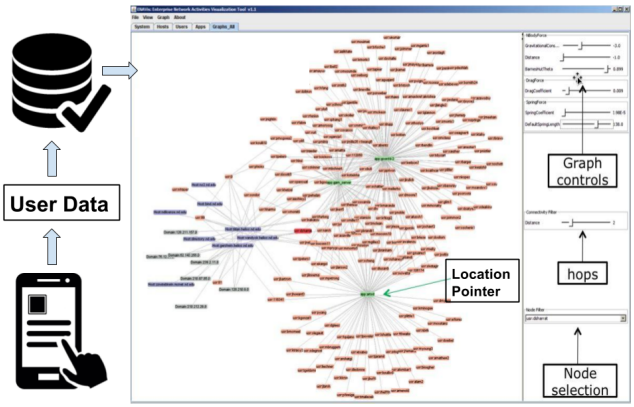

Figure 1: Process of obtaining data and producing pipeline design

Step 3: To remove the maximum amount of water at an optimal time, Ford-Fulkerson's maximum flow algorithm is applied.

4. RESULTS AND CONTRIBUTIONS

Users can report different incidents of logging categorized on areas. Around 50 users of 3 to 4 different locations,used our application. We wish to produce a cross-referencing Google map by crowd-sourcing [1] user data to formulate actual flooded area (with the help of image processing). We also planned to accumulate regression lines depending of different seasons and place them accordingly in the map.

5. REFERENCES

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