Fostering Citizen Science and Crowdsourced Data for Chicago's Stormwater Failures

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Introduction

- **Importance of Flood Prediction**: Critical for understanding and mitigating urban water flow effects due to precipitation.
- **Limitations of Traditional Methods**: Current hydrological models and data collection are often inadequate due to resource and coverage limitations.
- **Role of Citizen Science**: Provides a viable way to improve stormwater data collection by using community efforts to obtain localized data.

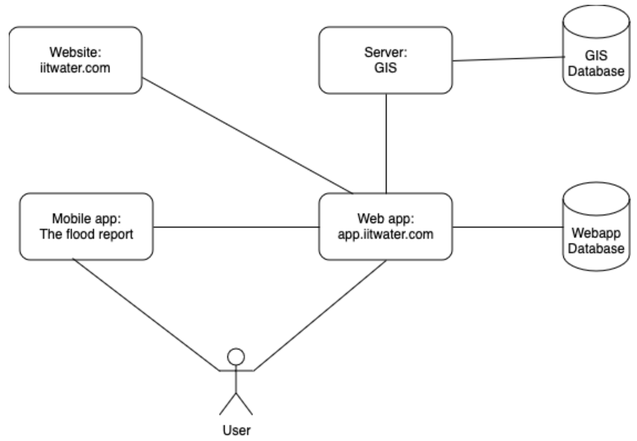
Objectives

- **Promote Citizen Scientist Engagement**: Motivate community members to collect environmental samples and identify local pollution sources.
- **Leverage Crowdsourcing Technologies**: Use phones, cameras, and social media for real-time flood and impact reporting.
- **Solve Metadata Extraction Issues**: Address and streamline the extraction of data from citizen contributions for improved analysis.
- **Achieve Software-Server Integration**: Ensure Linux-based GIS software works seamlessly with existing server systems for data processing.

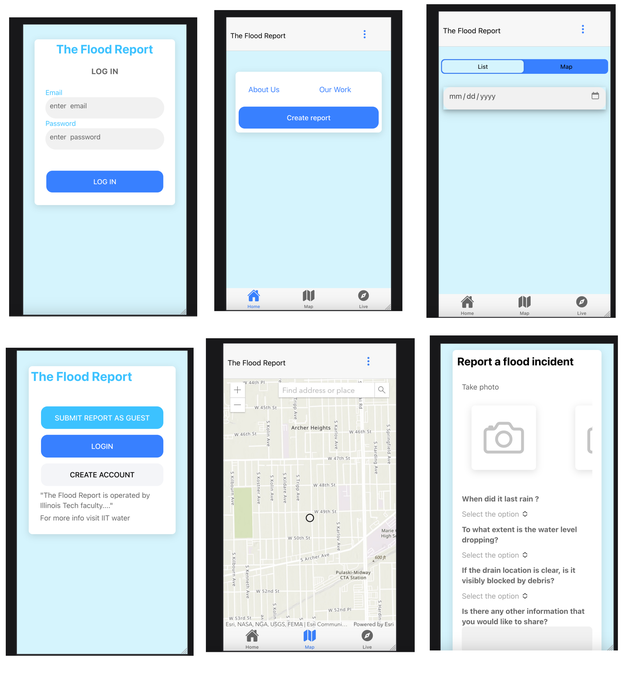
Motivation

- **Bridge Scientific Infrastructure Gaps**: Utilize citizen science to fill the void in formal stream and flood monitoring systems.
- **Create Specialized Reporting Tools**: Develop a custom phone and web portal for Chicago's citizens to report on stormwater infrastructure, enhancing data for hydrology studies and management.

SYSTEM DESIGN



WIREFRAME OF THE APP



App Design Process:

1. Identify app requirements
2. Select development platform
3. Select imports and plugins (research libraries, API)
4. Build a user interface
5. Develop and integrate the apps with API
6. Refactor app based on the feedback given

Methods

- **User-Friendly Design**: Build an easy-to-use phone and web portal for reporting stormwater issues.
- **Report Submission Features**: Include options for uploading photos and providing detailed descriptions of stormwater problems.
- **Metadata Analysis**: Use algorithms or software to analyze submitted reports and extract important details like location and time.
- **GIS Integration**: Connect the portal to GIS software to enable spatial and temporal mapping and analysis of data, even if there are compatibility challenges.

Expectations

- **Increased Data Collection**: Significant growth in local stormwater data through citizen science contributions.
- **Effective Stormwater Management**: Better stormwater management practices informed by comprehensive citizen-contributed data.
- **Improved Flood Prediction Models**: Enhanced accuracy in predicting floods due to a richer dataset.

References

https://ionicframework.com

https://www.npmjs.com/package/exif

https://www.bikelaneuprising.com

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