2024 ENGINEERING INSTITUTION OF ZAMBIA SYMPOSIUM

Kitwe flood alert and reporting mobile application

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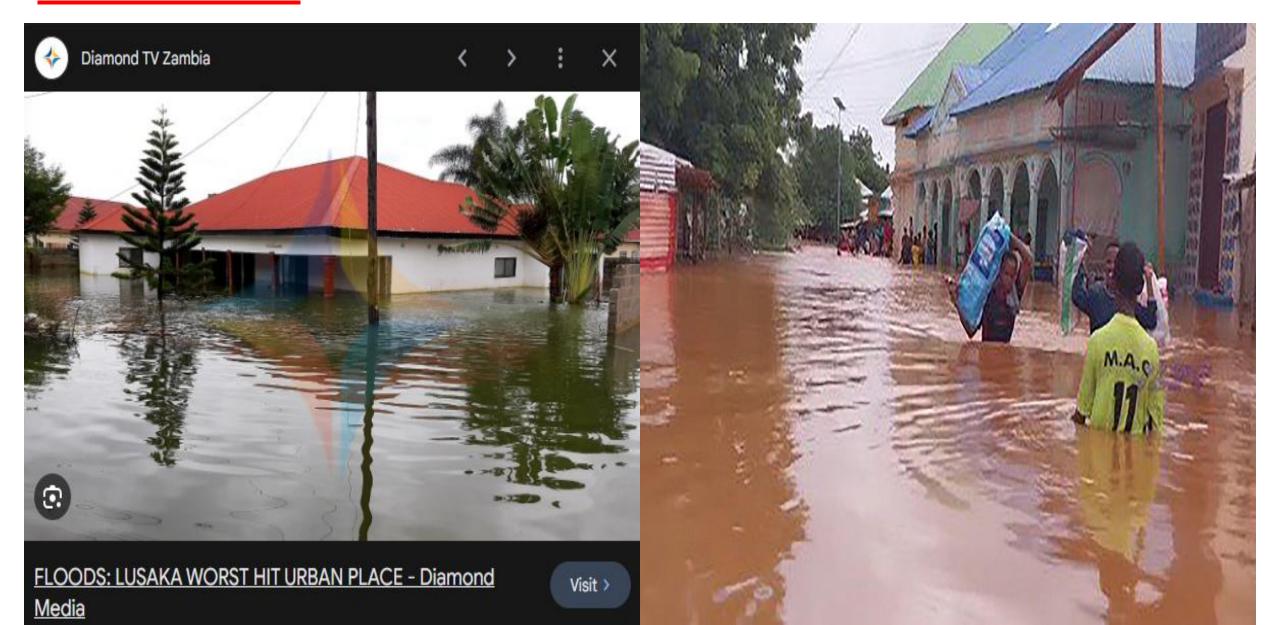**DATE**   **: April 2024**

Avani Victoria Falls Resort, Livingstone, Zambia

INTRODUCTION

➢ Floods are a major concern for people living in many parts of the world.

➢ With unpredictable weather patterns and increasing impervious cover due to urbanization, the risk of floods is higher than ever before.

➢ Flooding can have a devastating impact on people's lives and properties.

➢ To address the floods issue, a mobile app has been developed that will help users stay informed about floods within Kitwe.

➢ The development of a mobile app designed to address flood-related challenges is a critical and timely initiative in today's world.

Floods Disaster

FLOODS: LUSAKA WORST HIT URBAN PLACE - Diamond Media

STUDY AREA

➢ Kitwe is a district in Zambia located in the Copperbelt Province, known for its mining industry.

➢ Land use includes mining operations, residential and commercial areas, and agriculture on the outskirts.

➢ As of 2022 the population of Kitwe was estimated as **661,901** (ZamStats, 2022).

METHODOLOGY

- ➤ The application was developed in Java and XML languages using android studio as the development environment.

- ➤ GitHub was used to collaborate and store different parts of the code as the application was being developed.

- ➤ The main activities are outlined below.

  - ✓ The Application interface was designed using XML programming language in android studio.

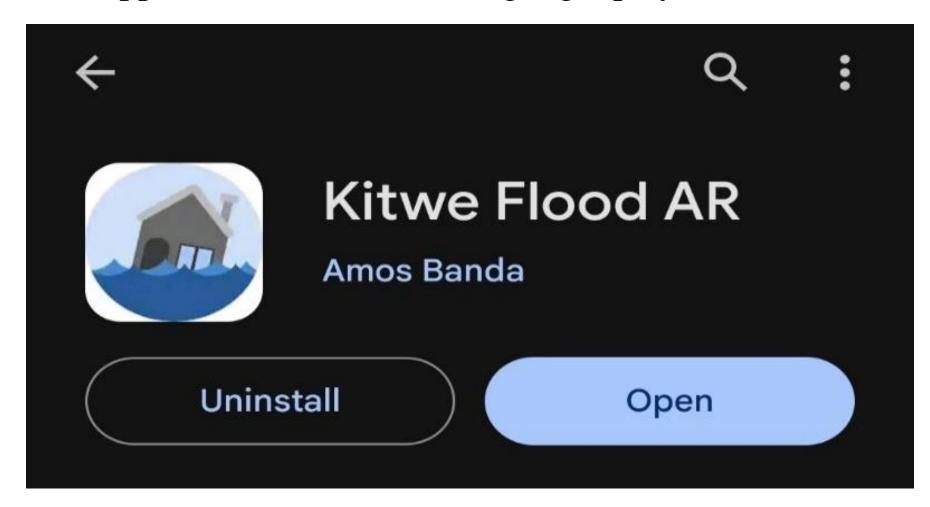 - ✓ Flood hotspot map was uploaded to the mapbox website.

METHODOLOGY

➢ The main activities are outlined below.

- ✓ Functions were created to make area and distance calculations in android studio.

- ✓ An algorithm that detects if the user is in a flood hotspot was coded.

- ✓ A dashboard was created for the admin or relevant authorities to manage and update status of the reports.
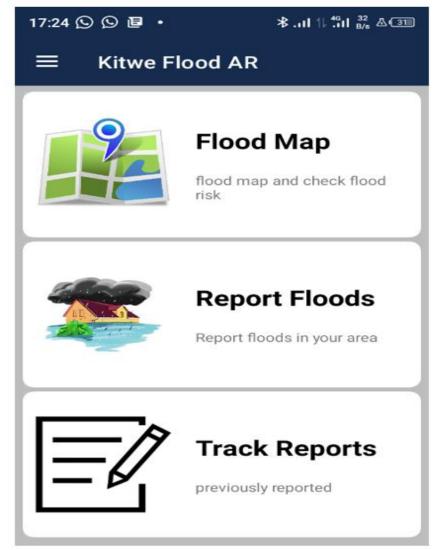
- ✓ The App was uploaded to play store.

How to use the developed Flood App

➢ The application is available on google play.

How to use the developed Flood App

➢ Once the user installs and signs up, they may start using the application.

How to use the developed Flood App

➢ **User's interface.**

How to use the developed Flood App

➢ **Admins interface.**

➢ Provide feedback.

Summary of reports	Single detailed report

How to use the developed Flood App

➤ **Admins interface.**

➤ Statistics tab.

Statistics	Manage reports main tab

DISCUSSION

➢ The application was tested using a group of fifty Kitwe residents and all testers found the flood map useful in assessing whether or not they were in a flood risk zone.

➢ The ability to report floods also provides an opportunity to collect real-time information about which areas are flooded.

CONCLUSION

➢ A novel and innovative flood risk assessment and reporting application was successfully developed.

➢ The application uses advanced geospatial technologies to provide users with real-time information about;

✓ if the user is in a flood risk zone or not.

✓ how far they are from the flood risk zone.

✓ how far they are from the nearest reported flood.

➢ Another core feature of the application is that it allows users to report floods in their area.

RECOMMENDATIONS

➢ There is need to expand the app to other parts of Zambia.

➢ Disaster management and mitigation unit (DMMU) and water resources management authority should come on board to support and adopt the app for flood disaster management.

The End

THANK YOU FOR YOUR ATTENTION.