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Banjeer

Let the River Flows!

Banjeer

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Let the Rivers Flows !

A computer vision-based web app to monitor the condition of rivers from satellite images



Team Introduction.



M Irfan Akbar
Computer Science and
Business & Technology
Management
KAIST



Jonathan Willianto
Mechanical
Engineering and
Computer Science
KAIST



M Izaaz Inhar R
Computer Science and
Civil and
Environmental
engineering
KAIST



Reinatt Hansel Wijaya
Computer Science and
Business & Technology
Management
KAIST

Team Introduction.

"We are four Indonesian students studying abroad in South Korea. The stark difference between a developed country like South Korea and a developing country such as Indonesia motivates us to contribute to our country's development. We strived to realize it by utilizing our knowledge in technology."



A recurring problem!



Flood is an annual problem for our capital city, Jakarta



Already a prominent problem from the 17th century



The impact is persistently growing due to the climate change

Why flooding? (In Jakarta)



The geographical location of Jakarta

Most of Jakarta's area is considered as a lowland area with the surface height of merely 7 meters above sea level



Poor drainage system

The open sewage system makes the condition worsen



High rainfall intensity

The climate change make the rainfall intensity even higher during the rainy season



Poor public awareness

The public awareness towards the clean environment is still minimum and therefore making the area more prone to flood

Current government approach.

The Jakarta province
government spend

**1 Trillion
Rupiah**

(70 Million USD)

Annually to reduce the
effect of the flood



Dredge and build reservoirs, rivers,
ponds

Naturalization of river



Vertical Drainage

However, these costly and
time-consuming
approaches fails to address
the problem entirely!

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Our Solution!

We aim to aid various stakeholders, including the government and the citizens, in **the mitigation, preparation, and response** to Jakarta's annual flood



Ultimate goal: help the response to the flood globally, especially in the developing nations

Map Overlay.

Stakeholders can observe the condition of rivers in their city from the interactive map

Color Indicator



Good



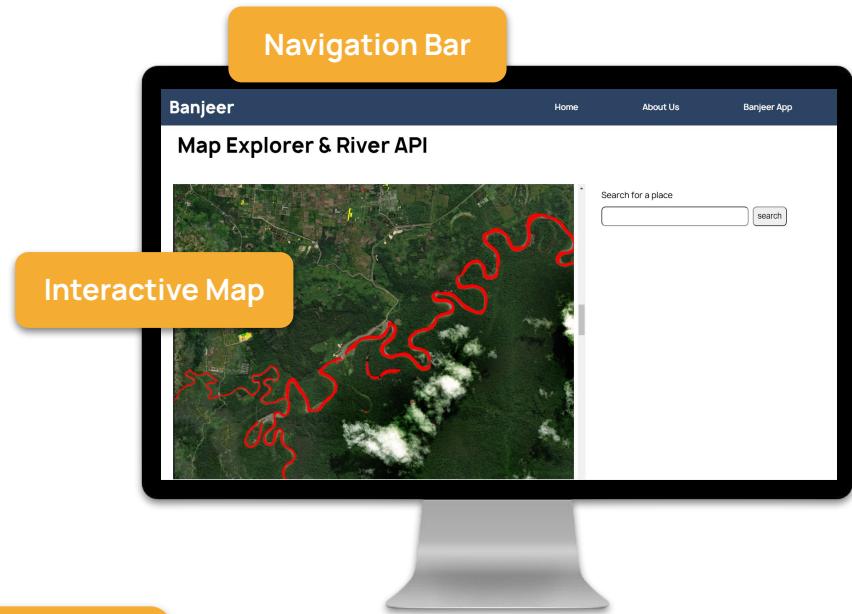
Mediocre



Critical

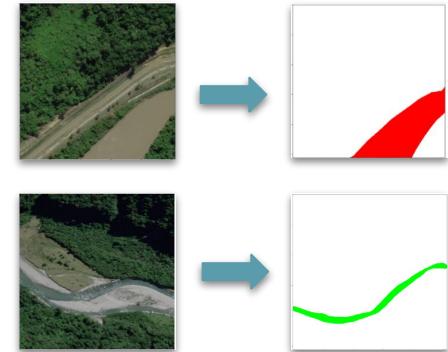


We made our feature as simple as possible to make it accessible for everyone!



Underlying Tech.

MAXAR

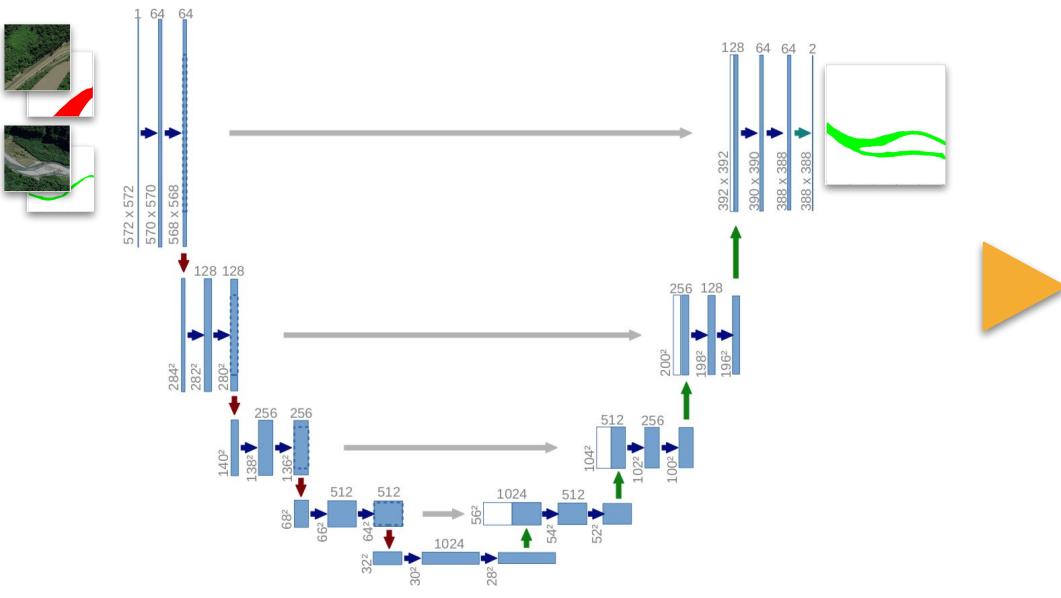


Obtain satellite image dataset from
MAXAR open data program

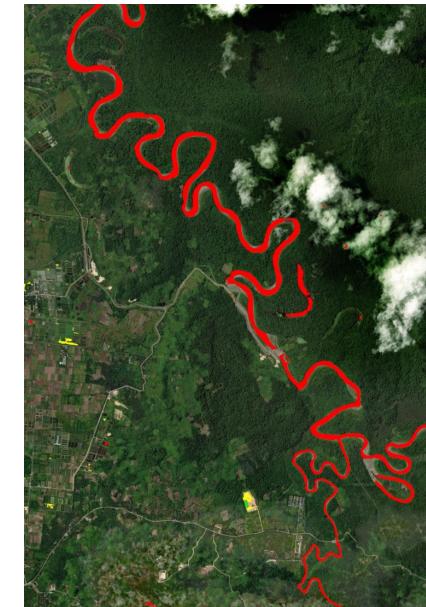
Partition the satellite image into 1024 x
1024

Manually annotate the image according
to their condition

Underlying Tech.



Feed the images and masks to the U-Net
Resnet50 architecture



Use the pre trained model to predict the
river quality in the entire city

My Nearest River.

Provide the information regarding the condition of the stakeholder's desired location

Act recommendation

Given the river condition nearby, the feature will give suggestions and recommendations to **prevent the flood** in the area

Aim

To improve the **awareness** of the general public regarding their environment condition

Navigation Bar

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Map Explorer & River API

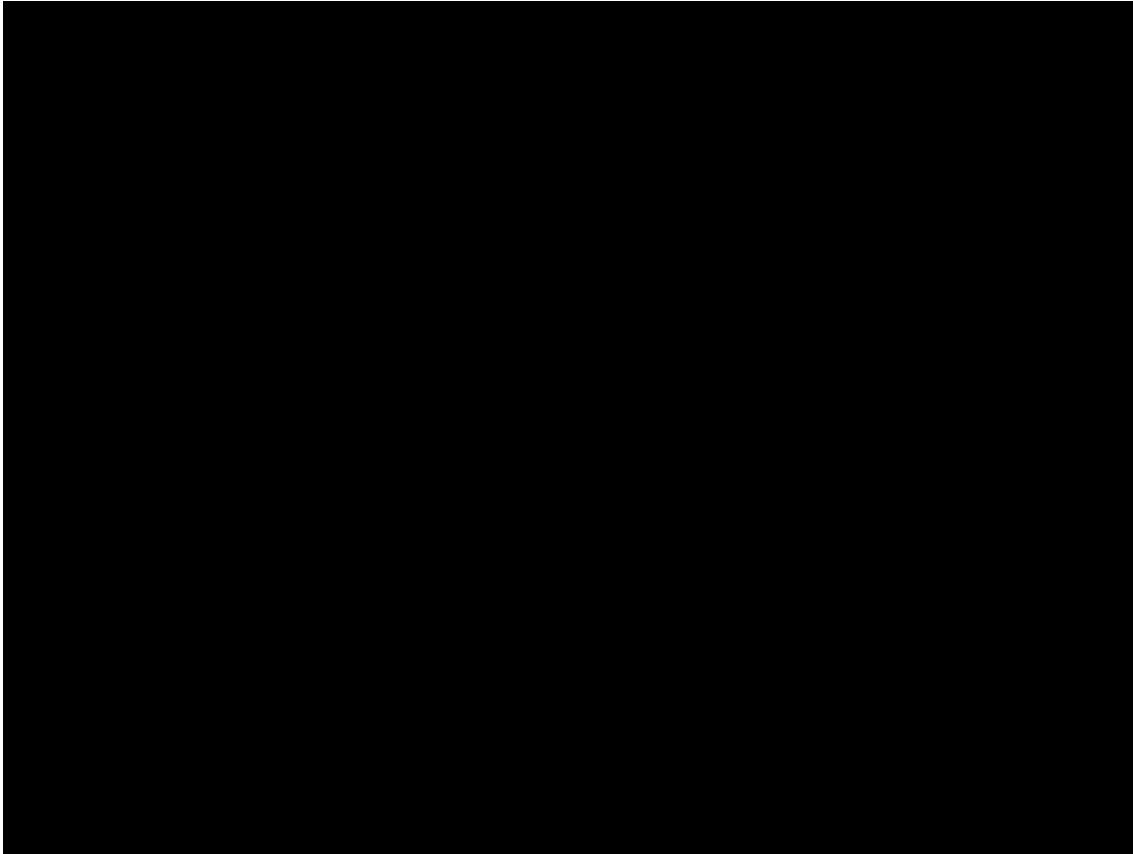
Search for a place search

Search Results

- Sungai Ciliwung**
Condition: Bad
Advice: Don't throw trash into the river
Plant trees on hills and near streams to reduce land run-off
Gather with your community for a river cleanup social work!
- Sungai Cakung**
Condition: Bad
Advice: Avoid making structures directly next to the river
Don't throw trash into the river

Information

Demo.



The Target.



Meet Anwar! (45)
The Government worker



Meet Reinatt! (20)
The citizen



Meet John! (35)
The enterprise owner

Occupation

Public servant at the Jakarta's government office, Disaster prevention division

Characteristic

Fast-paced worker who are willing to do anything for a job promotion

Goals

Get a promotion in the office from the great performance in his work

Frustration

No significant improvement in the Jakarta's flood

Occupation

Sophomore student majoring in Computer Science

Characteristic

Does not really care about his surrounding environment

Goals

To graduate with a flying color and get a decent job

Frustration

Heavy academic workloads forces him to abandon all of his hobbies

Occupation

Car workshop owner

Characteristic

Detail-oriented person who is really concerned with his business

Goals

Generate more revenue by trying to acquire more customer

Frustration

It is really hard to predict the amount of car spare parts to order

Marketing Strategy.

Influencers

Endorsements by influencers to increase social awareness



Social Media

Advertisements through social media



Collaboration with Environmental NGO

Collaboration with NGO to promote on their social media



Free Trials

8 days free trial for the enterprise account



Collaboration with Government

Collaboration with the provincial government for the annual flood countermeasure



Branded Video

advertisements in online videos



Pricing Model.

	Banjeer Gov (Government)	Banjeer Pro (Enterprise)	Banjeer Lite (Citizen)
Pricing Model	One time payment	Subscription-based	Free to use
Data Frequency	Real-time	Real-time	Non real-time
API	✓	✓	✗



We provide the non real-time service for free in order to raise awareness to the general public regarding the river condition

Future Plans.



predict the real satellite image of the desired city and integrate it with bing map



Consult with hydrologist for a better annotation scheme



Expansion to other flood-prone cities

Thank you and let the river flows!