VisualAI For Nature

HARNESSING AI TO PROTECT OUR NATURE

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AGENDA

- Problem Statement

- Why AI?

- Our Solution

- DEMO

- Technical Aspects

- Future Work

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Our Problem Statement

Interconnected Climate Crisis: Coral Reef Health

The Guardian

Antarctica sea ice reaches alarming low for third year in a row

The extent of ice floating around the continent has contracted to below 2m sq km for three years in a row, indicating an 'abrupt critical transition'.
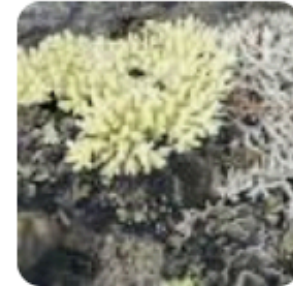
EL PAÍS English

The Arctic is set to completely melt for the first time within two decades

Satellite observations and a new climate model predict that the North Pole will lose all its ice each September.

The Phuket News

Phuket coral reef health sparks concerns

Officials from the Department of Marine and Coastal Resources (DMCR) conducted a survey of coral reefs at Phuket's main tourist hotspots amid concerns of coral...

AP News

Experts say coral reef bleaching near record level globally because of 'crazy' ocean heat

More than three-fifths — 62.9% — of the world's coral reefs are badly hurting from a bleaching event that began last year and is continuing...

ICE MELTS : Key stats

- Melting glaciers contribute to *70% of global sea level rise*.

-Over 680 million people live in low-lying coastal areas vulnerable to flooding.

Coral Reefs : Key stats

- 50% of coral reefs have been destroyed in the last 30 years.

- Reefs generate $375 billion annually from tourism, fisheries, and coastal protection.

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HOW VISUAL AI CAN HELP

- Real Time Monitoring
- Location Specific Insights for prioritizing efforts
- Early Warning System
- Scalibility in monitoring efforts

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MINIMUM VIABLE PRODUCT FEATURES

- Glacier/Ice Melt segmentation to predict when the ice melt happens
- Coral Reef Health Classifier Model

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DEMO

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FEATURES WE PLANNED

Coral Reef classifier :

There were 2 features we planned for the Coral Reef Tracking:

1. Create a classifier which helps identify Healthy/Bleached and Dead Coral Reefs
2. Use the CoralNet online database to run our classifier across Global Reef Locations to identify and prioritize rescue

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FEATURES WE PLANNED

Global Glacier Melt Segmentation:

1. Create a classification algorithm and fine tune it to run and identify glacier melt offs.
2. Use the above classifier to identify and predict glacier melts
3. Use the aforementioned data to link interconnection between Ice Melt and the effect it has on the Reef health worldwide.

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Future Steps

In Long term, we plan to integrate the following features:
- Checking the interconnection between Coral Reef Health Data and Global Ice Melt rate
- Track and concentrate effort on affected areas
- Create a one stop solution for tracking all Ecological Classifiers which can be integrated into one

"Without a healthy ocean we do not have a healthy planet."

Secretary-General António Guterres

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CITATIONS

- [1] Kaggle Dataset : https://www.kaggle.com/datasets/vencerlanz09/healthy-and-bleached-corals-image-classification/data
- [2] Great Australian Reef Conservation report: https://github.com/earthtoolsmaker/coralreef-conservation/blob/main/reports/yolov8/report.pdf
- [3] Ice Melt articles : https://www.theguardian.com/world/2024/feb/24/antarctica-sea-ice-reaches-alarming-low-for-third-year-in-a-row
- [4] Coral Reef article : https://apnews.com/article/coral-reefs-dying-bleaching-climate-change-hot-oceans-548ced49c2aa68cecc6d6bc34713313c
- [5] Heat Change Impacts Reef Health : https://www.cnn.com/2024/04/15/climate/global-coral-reef-mass-bleaching-climate-hnk-intl/index.html

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Thank you!

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