Us vs. the Machine:

Making Impact Assessments More Efficient, More Accurate, and More Substantive

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Red Sea Global's first two destinations, The Red Sea and AMAALA, aim to be the world's most ambitious regenerative tourism destinations.

Both destinations were born out of Saudi Arabia's Vision 2030 strategy for economic diversification and growth, and will position the Kingdom on the global tourism map

Red Sea Global

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Threats Facing Coral Reef Ecosystem

Red Sea Global

Ocean Warming

Sea Level Rise

Destructive Fishing Practices

Coastal Development

Ocean Acidification

Changes in Storm Patterns

Pollution

Tourism

Climate Change

Disease

Human Activities

Coral Reef Ecosystem Data Collection Methods

Conventional Coral Surveys

Underwater surveys

Global Coral Reef Monitoring Network

Remote Sensing

Video Belt Transects

DNA Analysis

RUV & BRUV

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Water Buoys

Digital Dashboard

Coral Reef Ecosystem Data Collection Methods

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Labor intensive

Time consuming

Limited Scalability

Integration of AI and Machine Learning

Integration of AI and Machine Learning Capabilities

Calibration

Analysis & AI Model Refinement

Prediction & Verification

Source: RSGI Simulator

Expected Opportunities

AI-Driven Coral Mitigation and Compensation Efforts

Predicting Environmental Shifts

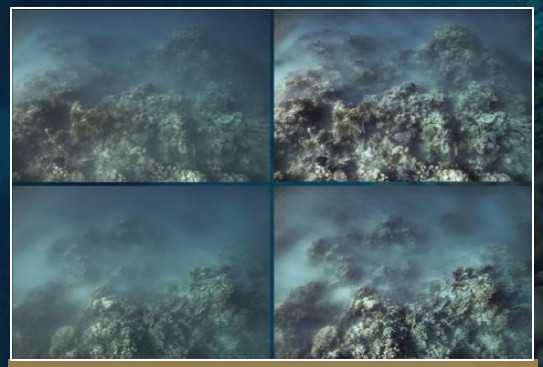
Monitoring Overall Ecosystem Health

Enhanced Impact Assessment

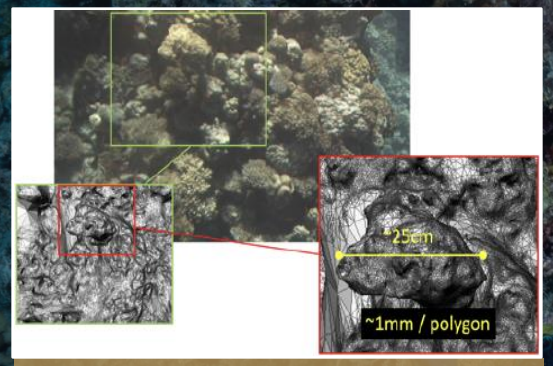
Integration of AI and Machine Learning Example

Vertigo3 is a towed underwater device, operating on the same principles as conventional fixed-wing aircraft. It flies close to the seabed, auto-piloting itself to maintain orientation and height above the seabed.

Outcomes of the Flying Fish Deployment

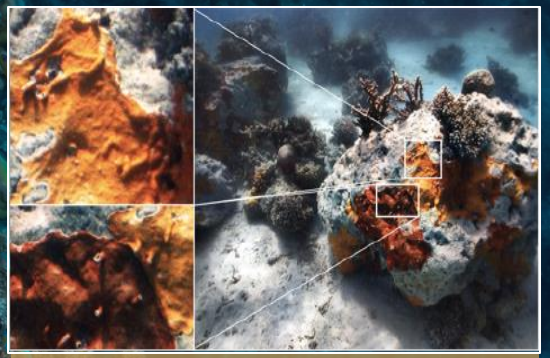


Turbidity monitoring



Photogrammetry

Machine Learning



Challenge Tasks

Integration of AI and Machine Learning Case Study Limitations

- **Structural Integrity of Camera Unit:** Fragile glider with limited impact capacity
- **Image color and clarity**: No camera calibration
- **Imagery Stability:** Glider-operator dependent
- **Machine Learning Capabilities:** ML developed for Australian coral database and Crown-of-Thorns recognition operational

Recommendations

Human Verification

Holistic Approach

Optimal Technologies

Let’s continue the conversation!

Message me your questions or comments in the IAIA25 app.

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