Second Reef

Beneath the Synthetic

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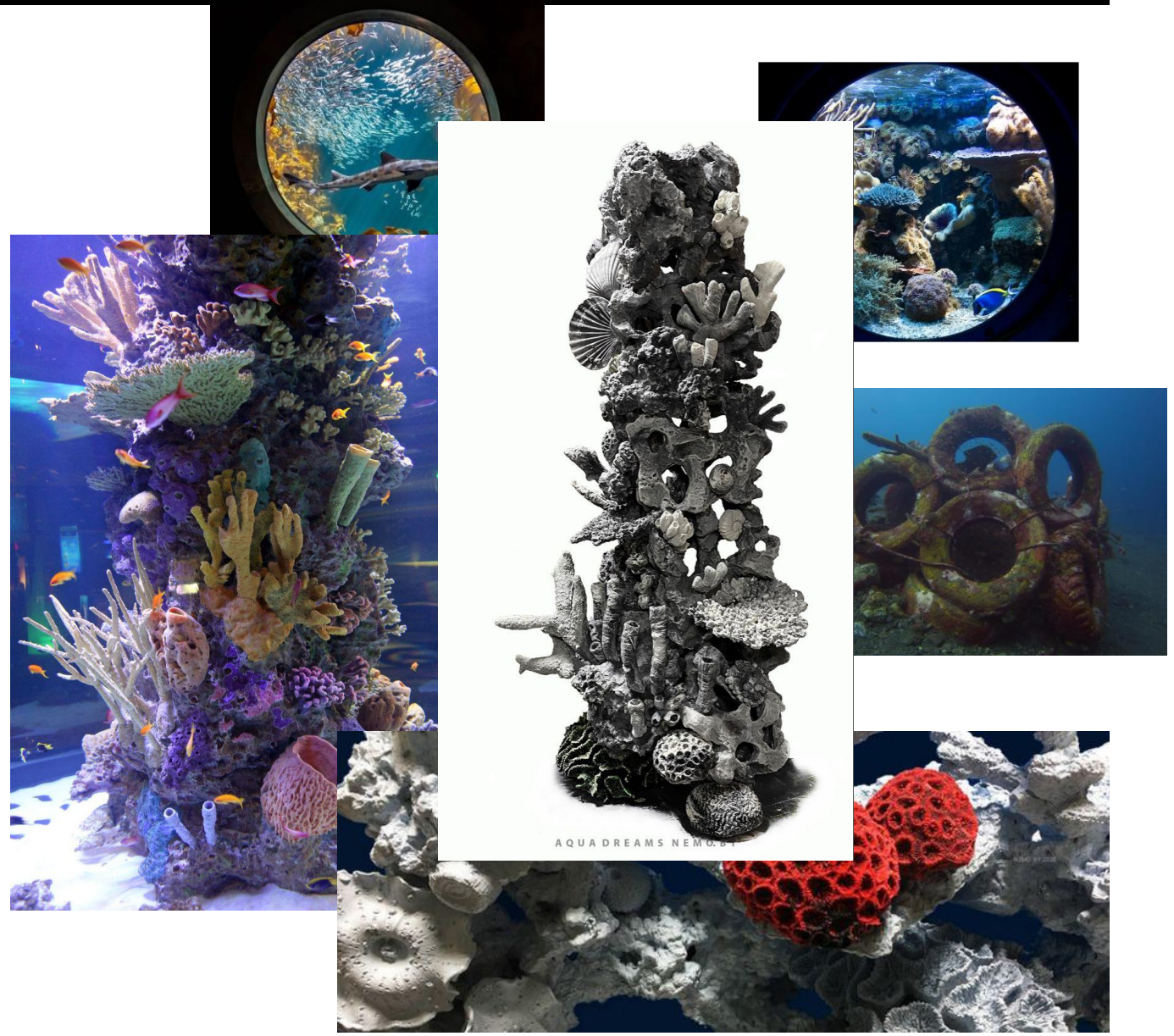
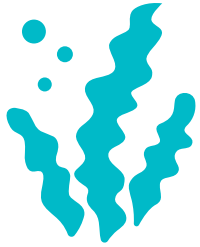
Overview

An interactive installation that explores the complex relationship between humans, technology, and nature through the lens of artificial coral reefs, encouraging audiences to reflect critically on whether technological solutions can truly repair environmental harm or simply mask it.



Problem

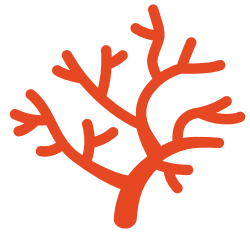


Problem:

- Coral reefs are rapidly declining due to climate change, pollution, and human activities.

- There is limited public knowledge and understanding of artificial coral reefs—their purpose, how they work, and their impact.

- Broader ethical questions arise around technological interventions in nature: can human-made solutions truly restore what has been lost, or do they risk masking deeper environmental issues?



Solution:

- Create an interactive, mixed-media installation that introduces artificial reef technology to the public in an accessible and engaging way.

- Present both the successes and challenges of artificial reefs, encouraging appreciation of their potential while also prompting critical reflection on the relationship between humans, technology, and nature.

Audience and Beneficence

Target Audiences

- General public with limited knowledge of artificial coral reefs
- Environmental advocates and educators
- Young learners (primary and secondary school students)
- Visitors new to interactive installations and museums
- Policy influencers interested in environmental communication

Beneficiaries

- The public: gaining greater awareness of coral reef conservation and restoration technologies
- Marine conservation efforts: increasing public support and understanding of ecological projects
- Educational institutions: providing an engaging resource for teaching about ecosystems and sustainability
- Creative and cultural sectors: offering an example of how art can contribute to environmental awareness and action

Literature Review:

Reef Ball
Started in 1993
Various coastal states, USA

Osborne Reef
Started in 1972
Fort Lauderdale, Florida, USA

Literature Review:

01

Complex interactions: humans both harm and attempt to restore nature using technology

02

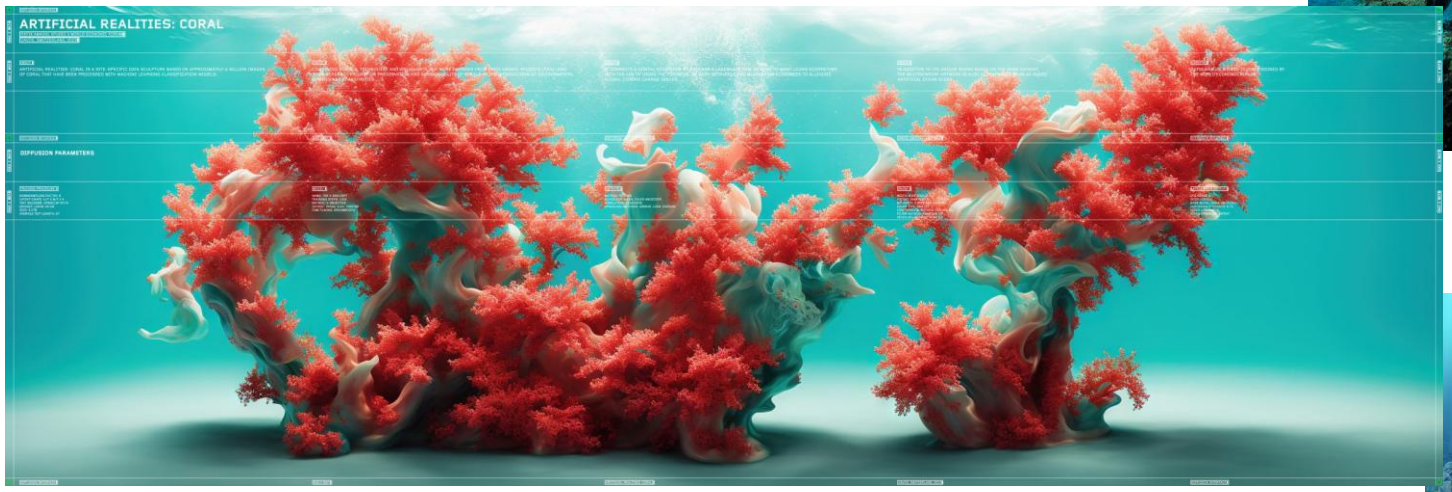
Example: synthetic materials from oil rigs (steel) and vehicles (rubber) reused for reefs

03

Ethical questions: Can we truly "undo" damage through technological interventions?

Literature Review:

◀ Jason deCaires Taylor



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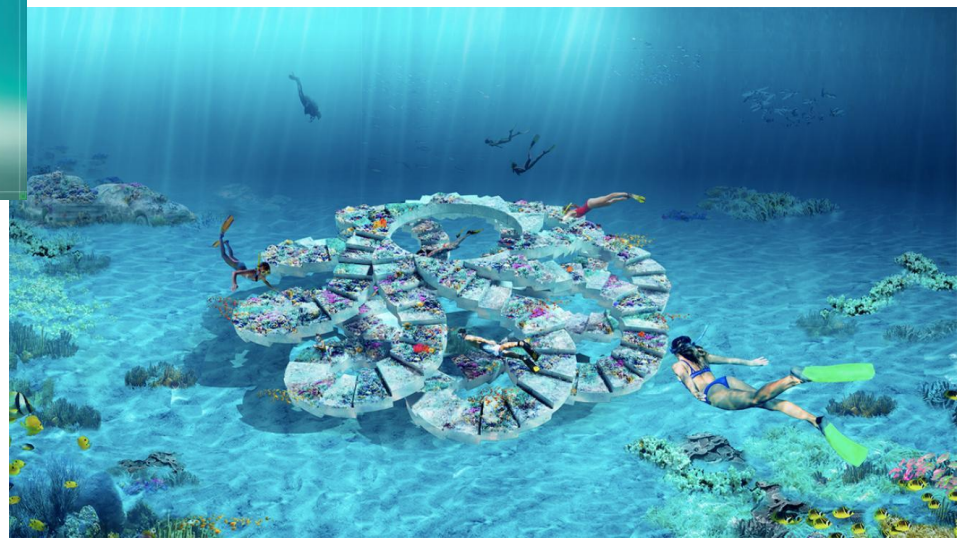


Miami Sculpture Park ▶

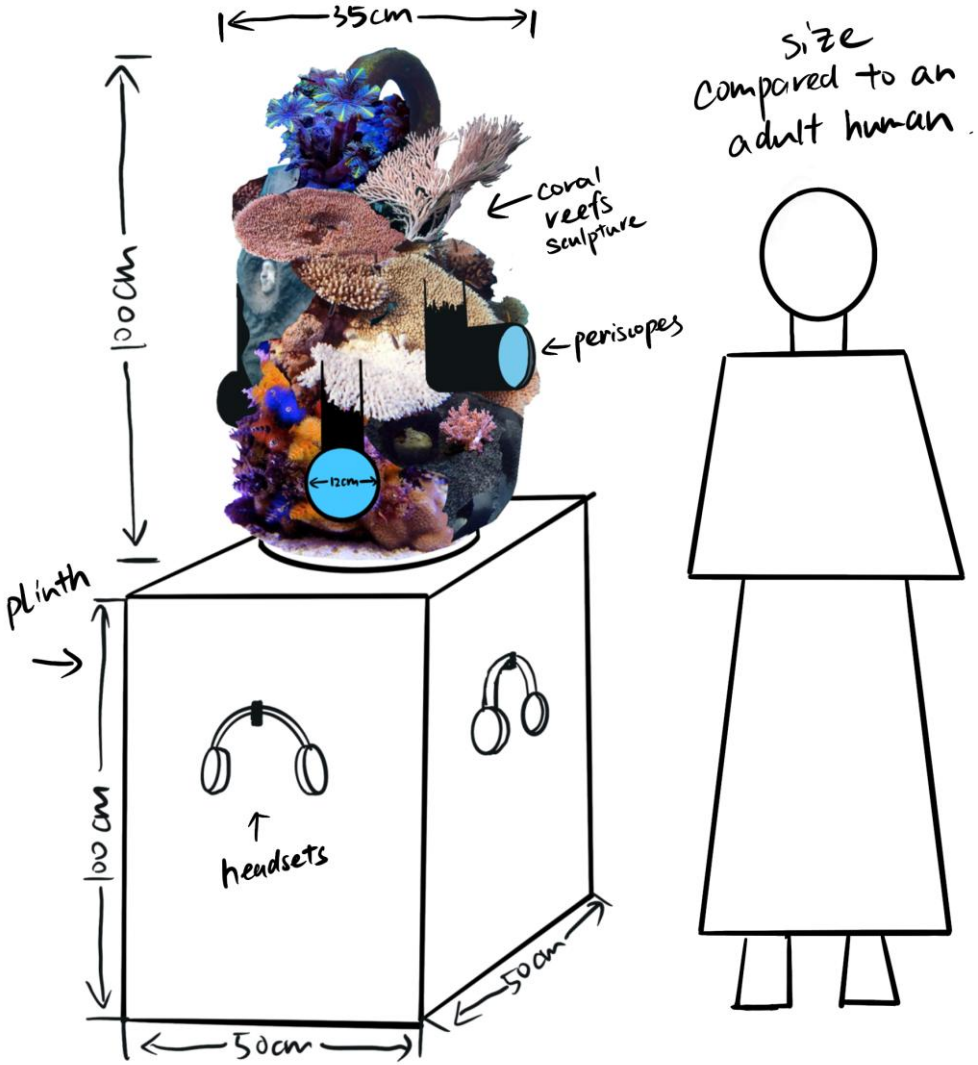
Design

Physical Components

- A large synthetic coral reef sculpture on a plinth, made from materials like recycled plastics, concrete mix, resin, clay, or foam
- Periscopes mounted around the reef—each embedded with small screens showing different content and connected to headphones for audio
- Speakers (directional speakers) for ambient audio zones, possibly with motion-triggered cues
- Motion or proximity sensors (PIR or ultrasonic) to detect presence and trigger media changes
- Microcontrollers to handle sensors/interactions

Softwares

- Python + Jupyter Notebook: used for data processing, analysis
- Processing – for generating visuals to be displayed within the installation (e.g. data visualisations inside periscopes)



Outcome

The final outcome of the project is an interactive, mixed-media installation features a synthetic coral reef sculpture, crafted from various artisan materials to mimic real artificial reef structures. Some parts of the reef are thriving and vibrant, symbolising successful restoration efforts, while others appear polluted and lifeless, representing failed interventions and the limits of human-made solutions.

Surrounding the reef, periscopes invite the audience to peer into different perspectives—from data visualisations to educational animations. Through this experience, the installation aims to celebrate the potential of artificial reefs while provoking critical thought about humanity's reliance on technology to "fix" environmental damage.

Time management

Construction Activities			DURATION (Days)
START DATE	END DATE	DESCRIPTION	
12/19/24	2/17/25	Ideation	58
2/19/25	4/18/25	Research	59
2/27/25	3/19/25	Concept development	22
3/9/25	3/16/25	User Research / Persona	7
3/19/25	3/29/25	Interaction Design	10
3/25/25	4/8/25	Sculpture Design	13
3/31/25	4/14/25	Visual Content Design	14
4/16/25	5/6/25	Experimentation & Fabrication	20
4/30/25	5/14/25	Digital Content Development	14
5/7/25	5/20/25	Assembly & Integration	13
5/20/25	5/23/25	Testing & Refinement	3
5/23/25	5/24/25	Installation & Setup	1
3/31/25	5/25/25	Thesis Writing	55
2/17/25	5/25/25	Blog Documentation	98

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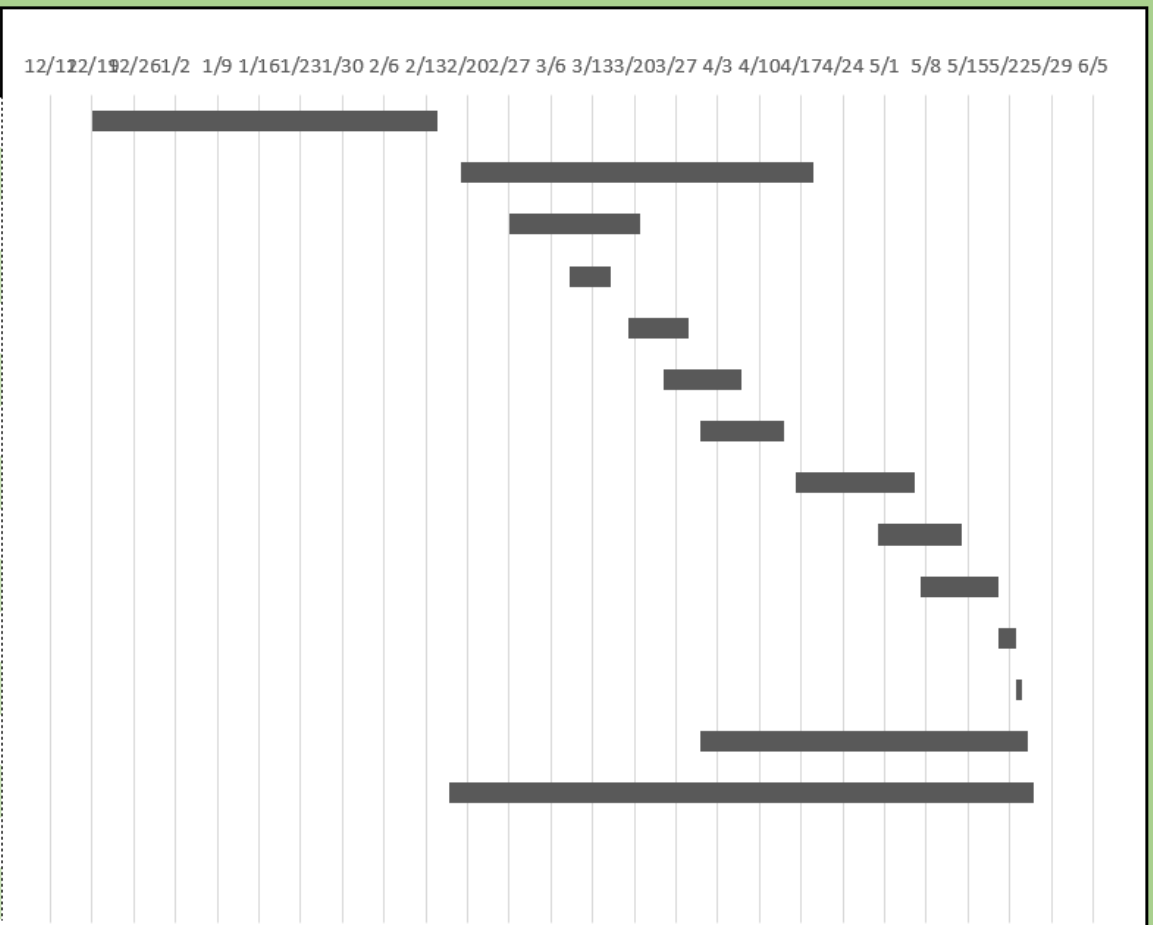


Thank you!