

NEPTECH - Remote Underwater AI Intelligence operation Platform

NEPTECH revolutionises **marine conservation** with **green-powered**, autonomous swarm robotics and **advanced AI**. The system replaces high-risk, expensive human diving with **collision-free underwater vehicles** that perform **real-time coral health diagnosis** and **water quality monitoring**. Featuring **3D mapping** capabilities, the platform provides **non-invasive, high-accuracy** data to safeguard marine ecosystems and support scientific research efficiently.

Hong Kong ROV Association
(EdUHK EASE Fund)



FEATURES AND ADVANTAGES

Swarm Robotics:

Enables **large-scale, collision-free** coordination among multiple units

01

High-Precision AI Analysis:

Delivers **real-time** coral species **identification** and health diagnosis (e.g., bleaching/physical damage) with up to **96.5% accuracy**

02

Non-Invasive Operation:

Eliminates physical damage to fragile coral reefs often caused by **human divers**, ensuring 100% safe monitoring

03

Comprehensive Data Intelligence:

Collects and visualises **multidimensional data**, including 3D coral maps, temperature, and water quality, on a unified dashboard

04

Cost-Effective Efficiency:

Reduces operational costs significantly compared to professional diving teams while **increasing data consistency** and safety

05

FUTURE DEVELOPMENTS

- Multi-Sensor Environmental Tracking:** Integrate advanced sensors (**pH, turbidity, dissolved oxygen**) to capture a detailed, historical **database of water environment changes** for scientific investigation
- Robotic Sampling Capability:** Develop specialised **robotic arms** for the ROV to perform **physical water and sediment sample collection** for laboratory analysis
- Long-Term Bio-Data Platform:** Enhance software capabilities to **correlate historical environmental data** with **coral health trends**, aiding scientists in **predicting** ecosystem shifts

