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Qrious

Saving the world's  
most endangered  
dolphin with AI

  
MAUI63

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# MAUI63 uses advanced technology and Artificial Intelligence in the fight to locate and protect New Zealand's much loved but endangered Māui dolphins.

The rarest species of dolphin in the world – the Māui dolphin – makes its home along New Zealand's wild coasts. With only 63 Māui dolphins left, these playful and curious animals are under constant threat from predation, climate change, toxoplasmosis, and fishing.

These threats are most acute in particular locations,

with pods swimming in and out of danger zones as part of their natural migration patterns.

Whether it is repositioning fishing fleets in real-time or taking direct conservation action, defending these vulnerable animals requires precise knowledge not only of where the dolphins are, but where they are likely to go in the future.

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## 1 — The Challenge

With the support of industry and government, MAUI63 operates a powerful, long-range drone. Equipped with high-resolution cameras and a sophisticated computer vision system, the drone can identify Māui dolphins and adjust its course to follow them.

As there are hundreds of thousands of square kilometres of ocean to cover, the drone can't be the only tool on the shelf to locate the dolphins. Qrious offered to help MAUI63 predict where the dolphins are likely to be, so the drone can more precisely locate and follow the dolphins.

Historical sightings of Māui dolphins from surveys conducted by boat are few, and usually only conducted in good weather and at certain times of the year. The hazards that these dolphins face, however, occur year-round and in all conditions. To succeed in tracking them, MAUI63 needs the capability to track the dolphins regularly and reliably.



Willy Wang, Rochelle Constantine, Tane van der Boon and their drone prototype.

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## 2 — The Solution

Based on a small amount of data from historical sightings from boats, Qrious applied Artificial Intelligence (AI) to create flight plans for the drone to have an optimal chance of locating Māui dolphins.

Inspired by principles of reinforcement learning, the Qrious AI system balances following previously recorded dolphin trails with exploring new potential sites where the dolphins might be found. It learns as the drone explores and discovers, creating an increasingly accurate picture of the dolphins' movements.

The AI system creates a heat map of probability for the drone to follow, maximising its chances of locating and tracking the dolphins.

"Utilising AI-driven predictive models to help inform where we should be flying should greatly improve the efficiency of our drone surveys."

— Tane van der Boon, Co-founder, MAUI63

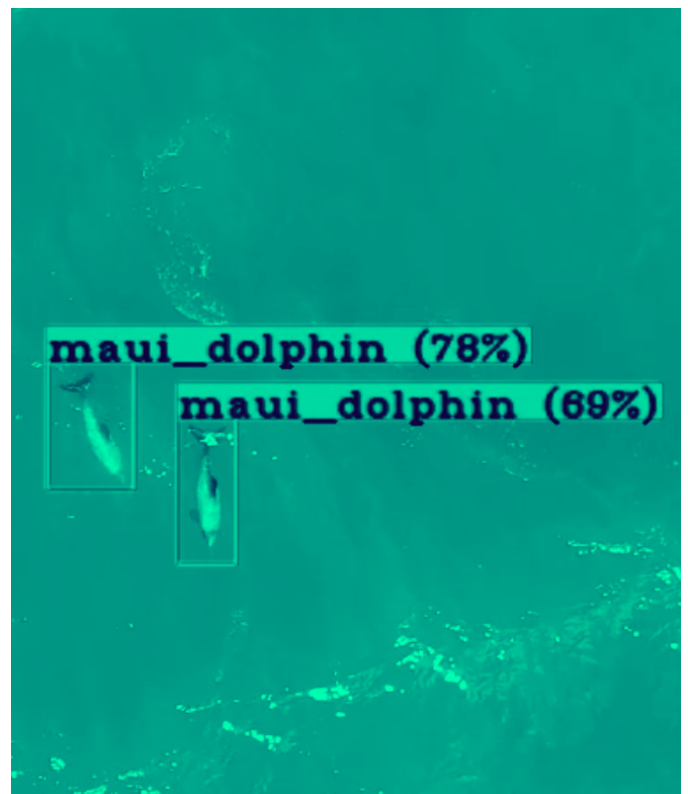
## 3 — The Result

### Flight path optimisation

Qrious' AI system will help MAUI63 plan their drone flights and locate Māui dolphins in the vast expanse of New Zealand's coastal waters. Alongside the increasingly sophisticated computer vision systems being developed by MAUI63, the intelligent spatial prediction and planning of search locations will dramatically increase the ability of the drone to locate and follow Māui dolphins.

### Building the New Zealand AI economy

MAUI63 has placed intelligent technologies and sophisticated hardware at the heart of its operations. This visionary approach is revolutionising marine mammal conservation and puts New Zealand at the forefront of the use of environmental Artificial Intelligence.



The MAUI63 system is learning to recognise Māui dolphins from video footage.

# Using AI to protect New Zealand dolphin teetering on the brink of extinction



## The challenge

There are hundreds of thousands of square kilometres of ocean to cover in search of Māui dolphins – the drone can't be the only tool on the shelf.

## The solution

Using principles of reinforcement learning – Qrious applied AI to create flight plans for the drone to have an optimal chance of locating Māui dolphins.



## Flight path optimisation

The intelligent spatial prediction and planning of search locations will dramatically increase the ability of the drone to locate and follow Māui dolphins.

## New Zealand AI economy

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## What's next?

This innovative use of cutting-edge technology powers a new generation of conversation technologies that can help monitor all marine life in our precious oceans.