The AI Pilot Project @ DFO

Developing Experimental AI Solutions In The Cloud to Drive Predictive Analytics at DFO

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The Fish Site

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A practical guide to using AI in aquaculture

· TECHNOLOGY & EQUIPMENT

by Jonah van Beijnen and Gregg Yan
27 January 2020, at 9:33am

Artificial intelligence (AI) is already making huge improvements to the efficiency and sustainability of

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Can AI Save Our Oceans? Let's Start With The Data.

Sandra Ponce de Leon Former Contributor
COGNITIVE WORLD Contributor Group ⓘ

AI

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The New York Times

A.I. Is Helping Scientists Understand an Ocean's Worth of Data

Machine-learning applications are proving to be especially useful to the scientific community studying the planet's largest bodies of water.

National DEFENSE

MARITIME SECURITY

Navy, Coast Guard Onboarding Artificial Intelligence Tech

10/16/2020

By Connie Lee

Forbes

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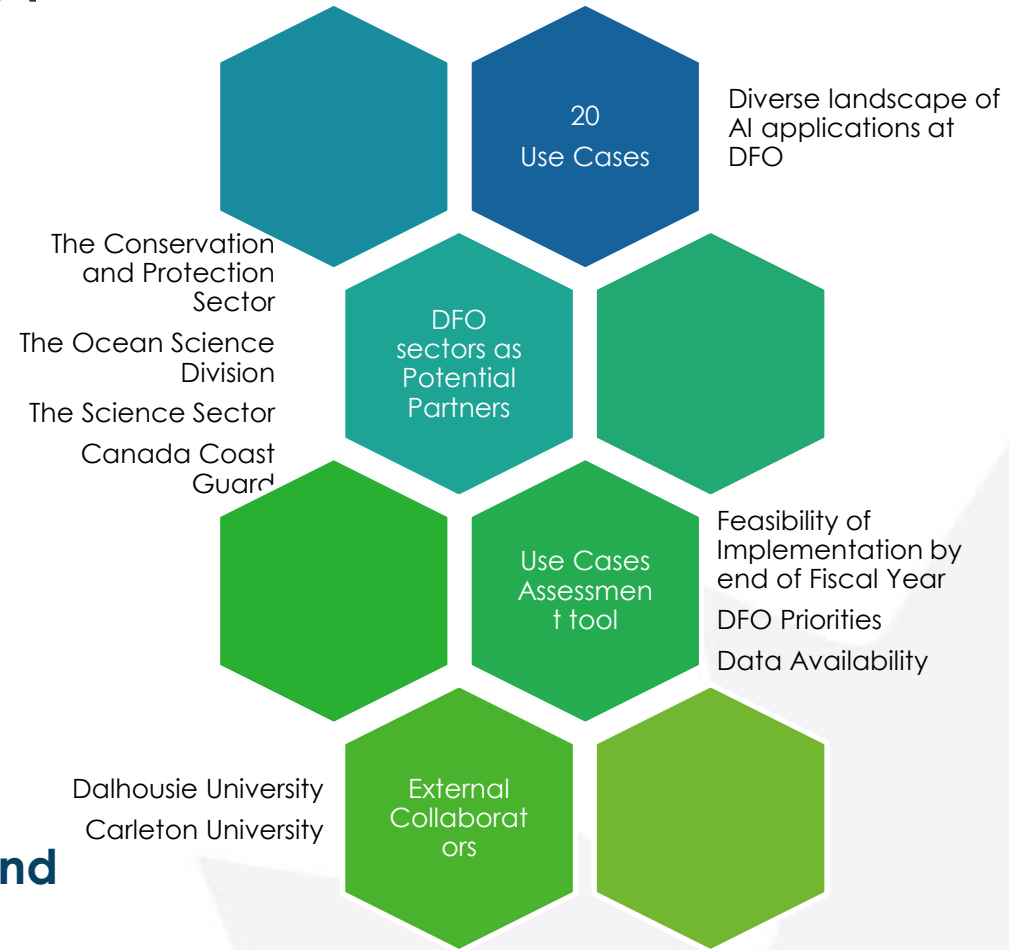# How Satellites And Machine Learning Are Being Used To Detect Plastic In The Ocean

Liz Allen Contributor ⓘ
Science

Liz writes about the ocean and its protection.

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Overview of the AI pilot project

Three use cases were selected for experimentation based on DFO priorities

- **Fighting Illegal, Unreported, and Unregulated fishing (IUU)**
- **Reducing vessels strike to endangered whales**
- **Analyzing ocean data to advance oceans science**

- Project was funded (2.4 M) through the **2020-21 Results Fund**

- Project was co-sponsored by **Strategic Policy/OCDO** and **HRCS/IMTS**, in partnership with programs and business areas

20 Use Cases — Diverse landscape of AI applications at DFO

DFO sectors as Potential Partners
- The Conservation and Protection Sector
- The Ocean Science Division
- The Science Sector
- Canada Coast Guard

Use Cases Assessment tool
- Feasibility of Implementation by end of Fiscal Year
- DFO Priorities
- Data Availability

External Collaborators
- Dalhousie University
- Carleton University

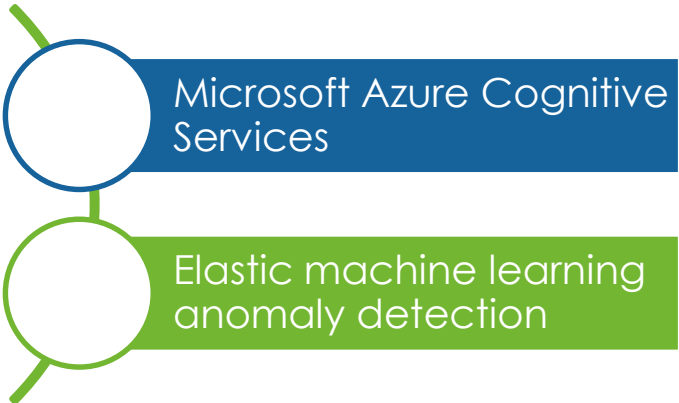**The Office of the Chief Data Officer**

Methodology

- The CRoss-Industry Standard Process for Data Mining (CRISP-DM)

- Industry-proven method to guide the data science efforts

- Consists of 6 main phases
  - Moving back and forth between different phases as it is always required.

CRISP-DM
https://en.wikipedia.org/wiki/Cross-industry_standard_process_for_data_mining

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The assessment of different off-the-shelf AI solutions and AI platforms

Off-the-shelf AI Solutions

Microsoft Azure Cognitive Services

Elastic machine learning anomaly detection

AI Platforms

Microsoft Azure Machine Learning Studio

Microsoft Azure Databricks

SAS Viya

Technology Stack for the AI Pilot

Use Case Formulation → Data Ingestion → Predictive Modeling → Automate Prediction → Visualization

Data Ingestion Tool: Apache NiFi

Storage accounts: Azure Data Lake Storage (ADLS)

Azure Databricks

Azure Databricks

PowerBI

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