



Colorado Science and Engineering Fair

2024 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: Optimizing Sustainable Fisheries with Machine Learning: Analyzing Ecosystem-Friendly Fishing in the Coral Triangle

Finalist's Name: Christina Abraham

School and City: Mountain Vista High School, Highlands Ranch

Sponsor's Name: Shaila Abraham

Category: Mathematics & Computer Sciences (MACS)

Division: Senior (9th - 12th grades)

Abstract (250 words or less):

This project aims to revolutionize sustainable fisheries practices by experimenting with a machine learning algorithm to analyze publicly available datasets on ocean temperatures, coral reefs, salinity, biodiversity, etc. Focusing on the Coral Triangle region and its surrounding nations, my hypothesis posits that assigning varying weights to each dataset will allow us to identify the most ecosystem-friendly and economically viable locations for fishermen targeting the highest influx of seafood. The core significance of this research lies in understanding and utilizing the power of machine learning to promote responsible fishing practices, ensuring the long-term health of marine ecosystems in underdeveloped nations. My experimental procedure involves developing and training a machine learning model, integrating and analyzing diverse datasets, and mapping the final optimal fishing zones. By initially selecting the Coral Triangle, a region of paramount importance for marine biodiversity and fisheries, we can tailor machine learning recommendations for other local fisheries worldwide. The scalability of this research is evident in its potential to be expanded globally, providing an adaptable framework for sustainable fishing practices worldwide and mitigating the environmental impact of overfishing.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.