O.D.O.B.A

Lackner, Isabella (School: Florida Atlantic University High School)

The goal is to determine if the scientist could create an easily accessible database of sea turtle blood images and an open-sourced machine learning algorithm that partners with a developing app. The primary inquiry of the scientist was whether she could develop a readily accessible application that employs machine learning to enable researchers, scientists, and students to identify any irregularities in their blood slides. Sea turtles are vulnerable to various diseases that can negatively affect their swimming, vision, and feeding abilities. The identification of these diseases can be challenging, especially in cases of Fibropapillomatosis. To identify diseases, researchers currently examine blood samples and manually count white blood cells, with an increase in lymphocytes being an indication of infection.   As more data was filtered through the machine learning algorithm the accuracy went from 0.6% to 84.6% and precision went from 6.6% to 89.4%, indicating there was a significant improvement from version 1 to version 4. The app platform now produces results to quickly identify five white blood cells through a camera or camera roll. The hypothesis was supported because the app is currently identifying white blood cells proficiently while having a high-functioning platform. The scientist has concluded that the machine learning model embedded in the O.D.O.B.A app is now able to identify white blood cells.

Awards Won:

NC State College of Engineering: Scholarship to attend NC State Engineering Summer Camp