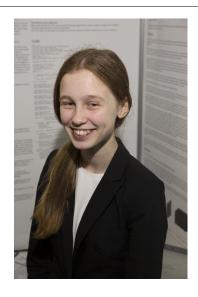




CWSF 2019 - Fredericton, New Brunswick



Lily Smales

Convolutional Neural Network to Detect Eyes with Visual Impairment

Challenge: Innovation
Category: Junior
Region: Bay Area
City: Oakville, ON

School: W. H. Morden Public School

Abstract: This project's purpose is to be a pre-diagnosis tool for people in remote

areas, who can't easily travel great lengths for an ophthalmologist. This was achieved using a convolutional neural network. Images of healthy and at-risk eyes were placed into the network. This network was trained on the data, and could identify a healthy or at-risk eye with 85% accuracy on

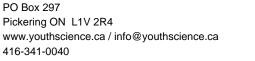
unseen data.

Biography

My name is Lily Smales, and I'm a grade 8 Student at W. H. Morden Public School in Oakville, Ontario. My favourite subjects are math and science. In my spare time, I like public speaking (in both English and French), participating in musical extracurriculars (choir, drumline, wind ensemble), being a member of my school's Change Club, Halton Skills, and Lego Robotics. This project is a continuation of my project from last year, which was inspired by a National Geographic article I read about eye disease. After reading the article, I became interested in the idea of a simple, affordable diagnosis tool, and I created a paper eye test that could be administered at home. This year, I combined my interest in machine learning with my interest in healthcare, to find a simpler way to administer this test, using neural networks. In the future, I plan to improve and combine the two tests, and potentially create something that could be applied to help those who don't have easy access to an optometrist or ophthalmologist for eye diagnosis.

Awards	Value
Excellence Award - Junior - Bronze Medal	
Sponsor: Youth Science Canada	
Western University Scholarship	\$1 000
Bronze Medallist - \$1000 Entrance Scholarship	
Sponsor: Western University	
Total	\$1 000





Youth Science Canada

