



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: A.I. Powered Pet Feeder

Finalist's Name: Ian Pfenning

School and City: Flagstaff Academy, Longmont

Sponsor's Name: Lauren Liedtke

Category: Mathematics & Computer Sciences (MACS)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

This project's purpose is to design and create a pet feeder that uses artificial intelligence (A.I.) to detect two different animals, and respond based on the needs of each individual pet. This eases the workload of a human with multiple pets, especially when said pets have different eating needs or habits. This project uses A.I. hosted independently in Python. The program takes live input from an external webcam, runs the image through the A.I. model, and outputs through an external LCD screen. The project uses Teachable Machine to host the A.I. model during training. The model uses approximately four hundred and fifty images in the model, with about 200 images of each dog. Currently, the project is limited to two different dogs, and does not yet include a physical feeding system. However, the project reliably identifies images as one of three classes: two different dogs and not a dog. Additionally, the program stores data of how many times each dog has been detected, simulating each time a dog has received food from the dispenser, and allows a limited number of times each dog can be fed. The project is currently in a working prototype state.

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: Ian Pfenning

Date: 2/27/24

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.