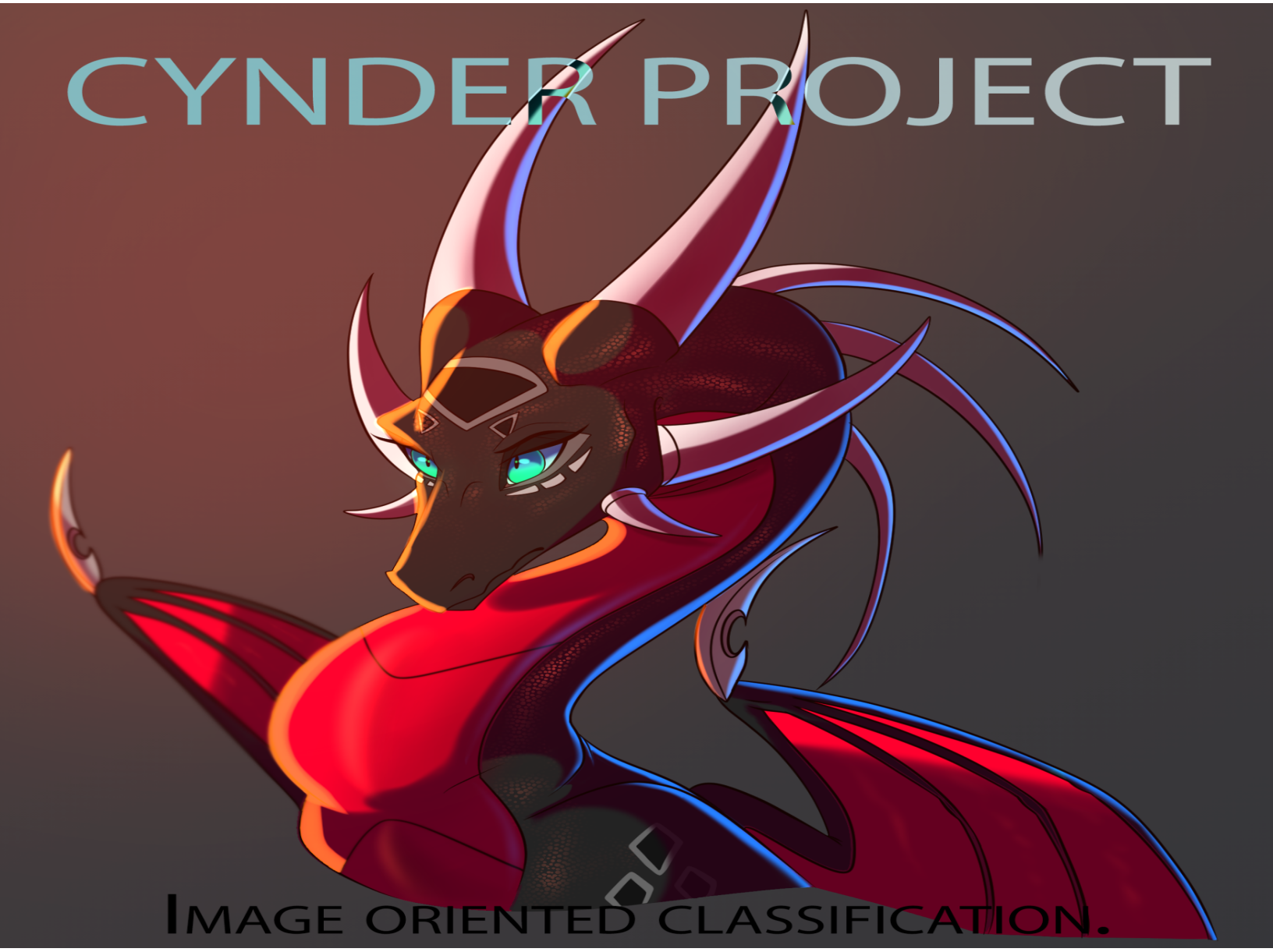


Cystic Fibrosis detecting AI system created by Brytan M Kelly, 3/26/2023

“I went through the diagnosis and it changed my life, my soul was crushed, I had just wished that I could have found out sooner and easier. Sadly due to the nature of Cystic-Fibrosis it can be almost impossible to spot its early onsets in pediatric patients. That is why I made this Ai, so that everyone could have a chance, a chance of beating this disease once and for all!” -Brytan Kelly

Model Loading Script README

This script loads a pre-trained model using TensorFlow's Keras API, and uses it to make predictions on a single image. The model in question is a binary classification model that distinguishes between cystic and non-cystic medical images. Requirements To run this script, you will need: Python 3.x TensorFlow 2.x OpenCV (cv2) module NumPy module How to use Save the pre-trained model in .h5 format to your local directory. Save the image you want to predict in .png, .jpeg, or .jpg format to your local directory. Replace the paths in the script with the paths to your model and image. Run the script in your terminal or Python IDE. Script explanation The script loads the pre-trained model using the load_model() function from TensorFlow's Keras API. The image is then loaded using OpenCV's imread() function. The image is preprocessed to match the input shape of the model and scaled between 0 and 1. The preprocessed image is passed to the model's predict() method to obtain a prediction. The prediction is converted to a class name using the class_names list. If the predicted probability of the positive class is greater than 0.98, the script outputs a message indicating that the person does not have cystic fibrosis. Otherwise, it outputs a message indicating that the person has cystic fibrosis.

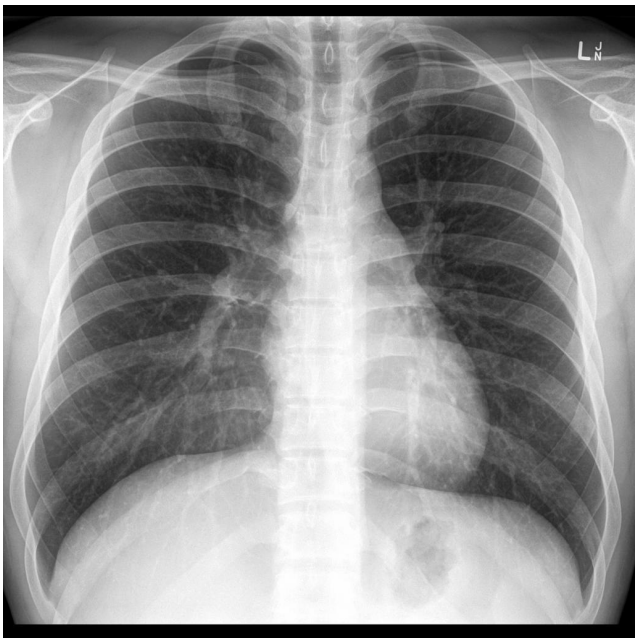
Cystic Fibrosis Identification in X-Rays Training script README

This code identifies cystic fibrosis in X-rays using a fine-tuned InceptionV3 model. The model is trained on a dataset of cystic and non-cystic X-ray images. The code uses OpenCV to capture video from the webcam and apply the model to each frame. If the model predicts that the frame contains cystic fibrosis, the code will draw a bounding box around the identified region. Requirements Python 3.6 or higher TensorFlow 2.0 or higher OpenCV Numpy colorama How to use Clone the repository or download the files. Install the requirements. Create two directories, "Train" and "Test". In each directory, create two subdirectories, "Cystic" and "Non-Cystic". Place your X-ray images in the "Cystic" or "Non-Cystic" subdirectories of the "Train" or "Test" directories. Update the paths for train_datagen.flow_from_directory and image_dataset_from_directory to the directories you created in step 3. Run the code. Model Architecture The code uses transfer learning with a fine-tuned InceptionV3 model. The pre-trained weights are frozen and a custom classification head is added to the model. The model is trained using binary cross-entropy loss and the Adam optimizer. Contact If you have any questions or suggestions, please contact me at arctic.framework@gmail.com.

Figures

Pediatric case:
Has early onset of cystic-fibrosis.

Cynder correctly identifies Cystic Fibrosis in lungs.



Middle aged case:

Does not have cystic fibrosis.

Cynder correctly identifies lack of Cystic Fibrosis.

ig. 1 Chest X-ray revealing bilateral diffuse infiltrations

Middle aged case:

Has Cystic Fibrosis.

Cynder notices buildup of Cystic Fibrosis.

Training Data

All training data used in this model has been hand collected by myself from non-copyrighted google photos, each one has been filtered by me and each set combined to allow for an accuracy rate in the model of up to .97678% unweighted. Furthermore the set utilizes a few images from the NIHL X-Ray database that represent normal lungs for the inverse training.

Model

This is the current model for Cynders Cystic Fibrosis Detection.
https://drive.google.com/file/d/1jYQ8-Ntjc2DpUITAxsw_wahh15f4i_5-/view?usp=share_link

Contacts

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