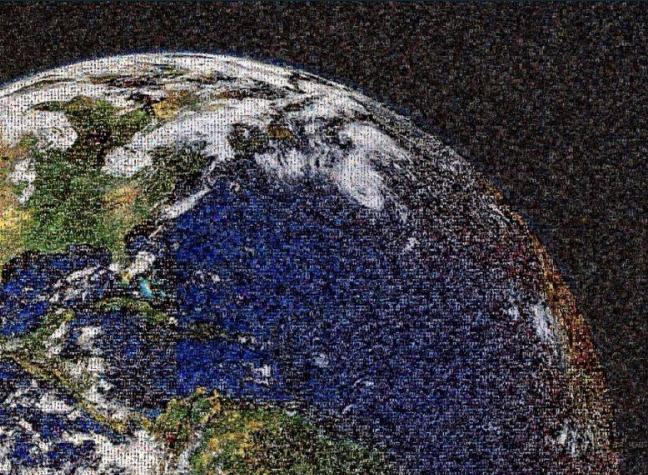


Photo Mosaic through Image Recognition

By Jennifer Hofer

Concept

Create a mosaic of someone's pet, made with tiles of the same animal.



Process



The Data

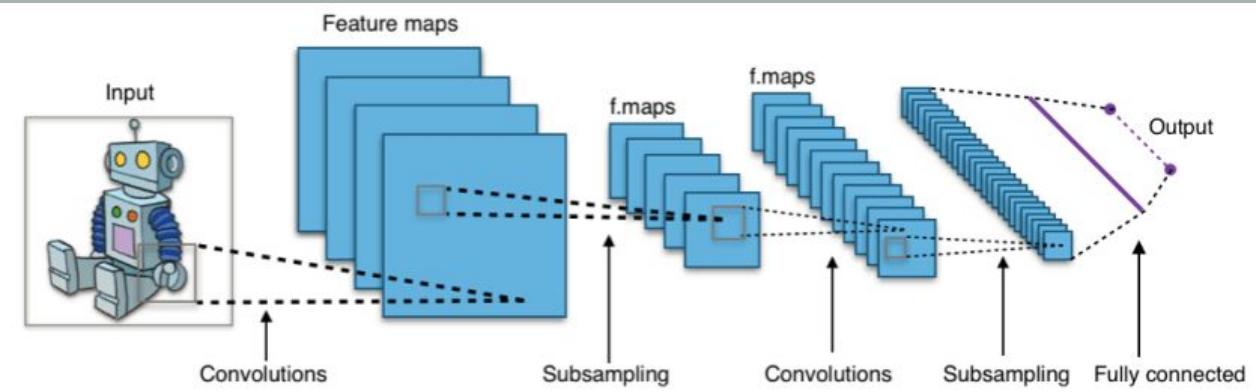


Kaggle had 25,000+ images of cats and dogs

These were the basis for my model, and the tiles for the mosaic



CNN Modeling with Keras



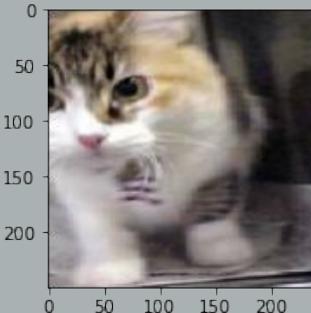
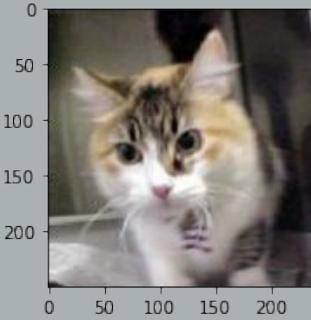
Convolutional Neural Networks allow us to understand how the relation of one pixel to another can classify an image

Image Data Generator

K

Allows us to build additional steps that each image can go through in its training, for better accuracy.

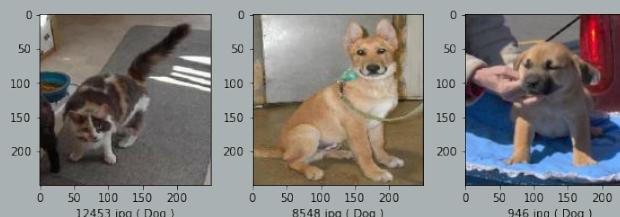
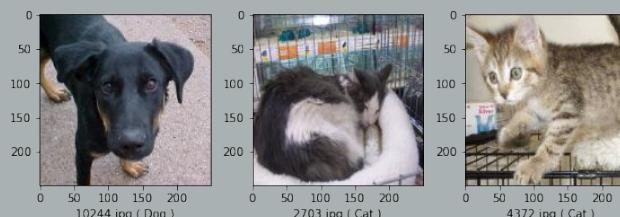
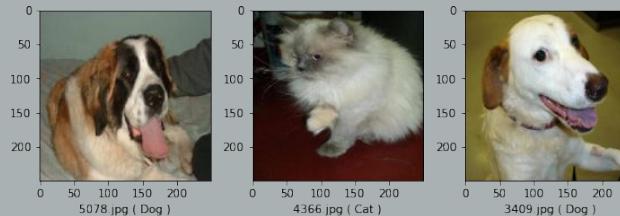
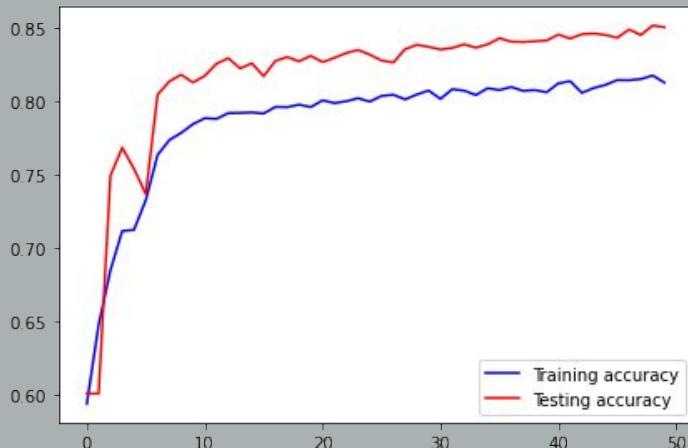
- Flipping
- Stretching
- Rotating
- Scaling



Model Implementation

K

85% testing accuracy



Mosaic Build



Oscar



Oscar 50x50



Tiles scaled for contrast

250x250



App Deployment



Streamlit

≡

Turn your pet photo into a mosaic!

Upload your photo below to see it transform into a mosaic of cats or dogs.



Original example

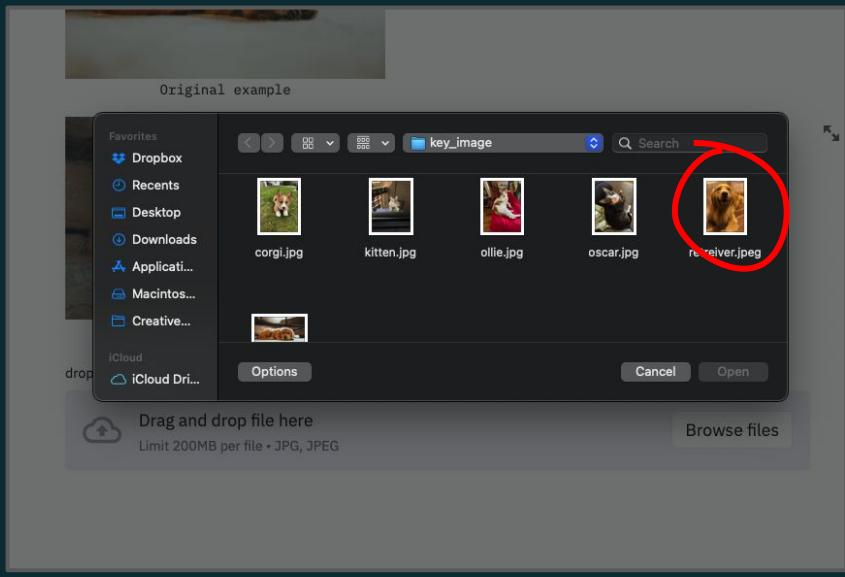


Mosaic example

drop your .jpg or .jpeg file below

Drag and drop file here
Limit 200MB per file • JPG, JPEG

Browse files



Mosaic example

drop your .jpg or .jpeg file below

Drag and drop file here
Limit 200MB per file • JPG, JPEG

Browse files

retriever.jpeg 1.4MB

X

file uploaded

What a cute dog! Our mosaic is rendering, and will be ready in a few minutes

Running dog_mosaic(...).

Resources

Special thanks to:

Caroline Schmitt
Dan Wilhelm
Heather Robbins
Kai Zhao
Riley Dallas
Noelle Brown



<https://www.kaggle.com/c/dogs-vs-cats>
<http://danielballan.github.io/photomosaic/docs/tutorial.html>
<https://www.pluralsight.com/guides/importing-image-data-into-numpy-arrays>
<https://www.tensorflow.org/tutorials/images/classification>
<https://keras.io/api/preprocessing/image/>
<https://www.geeksforgeeks.org/implementing-photomosaics/>
<https://docs.streamlit.io/en/stable/index.html>