**Filesearch+**

**Design Documents Ideas**

**GROUP MEMBERS**

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**SOFTWARE OVERVIEW**

The main function of this software is image detection. Windows can only search image by metadata, title or other words, not being able to search image by object in the image. To solve this problem, we will use pre-trained machine learning models in Python to detect the objects in the image. When the users enter a keyword to search, the program starts to detect the object of that keyword and shows the user all the images with that object.

**ANALYSIS OF THE SOFTWARE**

The core of this software is machine learning image detection. The mechanism for machine learning object detection is to extract different low-level features of the object, such as color, edge, texture, gradient, and frequency-based features and combine them into different layers. Besides the object characteristics, neural network adds more layers like activation layer and pooling layers to improve capabilities. By combining each neuron (function) in each layer into a complex network and determining the flowing of information by weight, the neural network can conduct a sophisticated task, such detecting a complicated object in real world setting.

We will use a pre-trained model. However, even if we do that, image detection still requires large amount of computation. We need reach a balance between image detection capability and accuracy, and the speed to make the software more applicable.

**ALGORITHM OF THE SOFTWARE**

Pseudocode:

load pretrained image detection model

input the object you want to detect

pop up a window to let user to choose a directory path

store the path of chosen directory

for (each file in the chosen directory)

if (the file extension is common-used image extension)

join the file’s name and directory path

open the file(image)

use image detection model to detect the all objects in it

result = only store the detection result we want in specialized data frame (detection result == object chosen)

if the result is not empty

print object founded

try:

display image

print image shown successful

except error:

show the error

else:

print object not founded

else:

print image doesn’t exist in the chosen directory.

Discovery path:

We design this software using bottom-up methodology. We first create a primitive image detection function using a pre-trained image detection model. After the basic frame has been constructed, we will add more features and functions to it. For example, we may create a user-friendly GUI, create a matching list in searching to make searching experience smoother, and strengthen the searching function.

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