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                                AppleBlushCalculator.txt
// when used in ImageJ, this macro will open a batch of photos of apples and
// calculate the percentage of the apple fruit covered by blush according to
// a blush threshold entered below. Note that the image should be
// colorimetrically corrected for maximum accuracy. Note also that a
// mathematical relationship should be worked out between the hue value in
// HSV and the hue value in the color space you are working in. HSV is not
// device-independent, so if working in CIELAB LAB, you will need reference
// color chips to develop this relationship. If working with .tiff, activate
// the line beginning run("Stack to RGB") by removing the "//" marks at the
// beginning of the line. Also, if working with .tiff images deactivate the
// first close(); command by removing "//."

macro "Apple Blush Calculator" {
    dir = getDirectory("Choose a source file that contains images");
    list = getFileList(dir);
    setBatchMode(true);
    for (i=0; i<list.length; i++) {
        path = dir+list[i];
        open(path);

//
        run("Stack to RGB");// this line is necessary if your image
//is .tiff format (rather than .jpg)
        changeValues(0,0,255);// this changes the background values
//to very high hue angle blue, which can be classified as
//non-data
        run("Color Transformer", "colour=HSV");
        changeValues(0.8,1,0);//classifies very high hue angle blush
//as 0
        changeValues(0,0.0187,0);// classifies low hue angle blush
//as 0. This line should be changed (the value 0.0187) to
//match the blush threshold of your system.
        changeValues(0.001,0.6,1);//classifies high hue angle
//non-blush as non-blush
        changeValues(0.6,0.67,0.30);// classifies background as 0.30

        run("8-bit");
        blush = 0;
        nonblush = 255;
        getHistogram(0, hist, 256);
        total = 0;
        for (j=0; j<256; j++)
            total += hist[j];
        //print("");
        //print("Blush pixels: " + hist[blush]);
        //print("Non-blush pixels: " + hist[nonblush]);
        //print("Blush to non-blush ratio: " +
        hist[blush]/hist[nonblush]);
        print(path);
        print("Percent Blush:"
        +hist[blush]/(hist[blush]+hist[nonblush])*100);
        // close();// this line is necessary if your original image is
        // .tiff format (rather than .jpg)
    }
    close();
    close();
}
}

```