

LAMPIRAN

LAMPIRAN 1 : DATA HASIL EKSTRAKSI CIRI CITRA

No	Citra Cacat				No	Citra Tidak Cacat			
	STD	Mean	Entropy	Energy		STD	Mean	Entropy	Energy
1	394,464	2040,386	-720071,4	4,45E+09	1	123,7488	3173,802	-1181647	1,04E+10
2	178,2282	1494,035	-505049,6	2,34E+09	2	102,9701	2579,713	-935921,1	6,86E+09
3	161,9071	819,7919	-254798,7	7,19E+08	3	91,99155	2942,116	-1085007	8,89E+09
4	337,9825	2266,926	-810361,6	5,43E+09	4	152,7371	2514,176	-909039,8	6,5E+09
5	286,5462	2746,522	-1004816	7,82E+09	5	199,013	2406,94	-867000,9	6,12E+09
6	304,2797	2360,465	-847493,3	5,82E+09	6	155,4299	2042,744	-719251,5	4,31E+09
7	292,4547	3113,086	-1157031	1,01E+10	7	111,1659	2655,277	-966637,7	7,24E+09
8	281,343	2389,809	-859594,1	5,99E+09	8	108,2991	2796,366	-1024631	8,02E+09
9	297,3327	1538,916	-522926,6	2,53E+09	9	199,9657	2694,847	-983107,7	7,48E+09
10	215,6412	1354,97	-452843,6	1,98E+09	10	149,0223	2848,371	-1046916	8,42E+09
11	331,302	2231,633	-796132,5	5,26E+09	11	142,076	2378,433	-854770,9	5,91E+09
12	278,3707	2576,986	-935348,4	6,9E+09	12	156,7767	2401,584	-863354,2	5,94E+09
13	244,159	1491,005	-504176,4	2,35E+09	13	89,85557	2555,94	-925966,9	6,7E+09
14	225,3555	2863,915	-1053178	8,49E+09	14	127,9554	2638,383	-959767,4	7,15E+09
15	228,424	2043,463	-720038,7	4,35E+09	15	156,6068	2790,149	-1022262	8,01E+09
16	415,7583	2118,677	-752052	4,87E+09	16	141,3828	2999,668	-1109014	9,25E+09
17	285,9393	2617,653	-952351,2	7,15E+09	17	143,094	2780,53	-1018177	7,94E+09
18	200,4006	1016,371	-327014,3	1,15E+09	18	132,0635	2568,416	-931321,7	6,8E+09
19	276,7126	1548,768	-526613	2,55E+09	19	143,4688	3107,676	-1153987	9,92E+09
20	224,9037	2286,952	-817639,2	5,45E+09	20	119,8359	2648,844	-964261,5	7,23E+09
21	327,2383	2289,648	-819174,2	5,51E+09	21	184,9031	2355,754	-844802,5	5,72E+09
22	279,4925	1253,96	-414816,3	1,71E+09	22	177,0044	2424,777	-872745,4	6,05E+09
23	237,567	2575,974	-934731,8	6,87E+09	23	120,8495	3119,556	-1159109	1E+10
24	222,1262	2449,384	-883859,5	6,28E+09	24	235,5428	2624,872	-954629,3	7,12E+09
25	195,2626	1243,939	-410901,8	1,68E+09	25	185,5033	2397,529	-862891,2	6,05E+09
26	242,6959	1402,624	-471247,4	2,14E+09	26	151,0226	2627,639	-955429,7	7,1E+09
27	360,979	1658,393	-569934,9	2,98E+09	27	106,4772	2533,614	-916953	6,6E+09
28	260,737	2831,092	-1039929	8,33E+09	28	186,6844	2683,898	-978909,3	7,45E+09
29	427,7074	2126,554	-754383,1	4,83E+09	29	356,6775	2590,623	-941180,7	7E+09
30	188,9062	1730,948	-596439,1	3,11E+09	30	248,5569	2815,249	-1032923	8,19E+09
31	430,2221	2089,149	-740434,5	4,74E+09	31	144,7628	3075,51	-1140607	9,73E+09
32	314,6758	2937,068	-1084887	9,09E+09	32	156,5879	2711,635	-989864,4	7,56E+09
33	226,8595	1106,906	-360847,9	1,38E+09	33	111,4307	2722,071	-994086,6	7,61E+09
34	167,2921	1133,172	-368614	1,35E+09	34	103,4823	2758,678	-1009467	7,85E+09
35	271,2823	2336,728	-839060,9	5,81E+09	35	174,8589	2484,119	-897908,9	6,47E+09
36	385,6923	2221,968	-792521,7	5,25E+09	36	134,3372	2436,224	-877268,6	6,1E+09
37	290,8903	2363,794	-849556,7	5,9E+09	37	224,3371	2330,986	-835052,2	5,63E+09
38	306,9889	2630,024	-957306,9	7,21E+09	38	140,9278	3020,103	-1117612	9,39E+09
39	239,7334	2029,743	-714788	4,32E+09	39	110,8002	2866,659	-1053803	8,44E+09
40	240,6963	2361,436	-847444,6	5,78E+09	40	195,9463	2235,163	-797310,8	5,26E+09
41	238,1303	1869,407	-652203,7	3,75E+09	41	150,8204	2207,199	-785074,3	5,04E+09
42	299,921	2262,091	-809239	5,48E+09	42	181,5247	2693,941	-982691	7,47E+09
43	302,8844	3035,71	-1124632	9,56E+09	43	177,6462	2374,728	-852591,2	5,82E+09
44	467,446	1895,783	-663990,7	3,96E+09	44	232,9476	2405,504	-865386,2	6,01E+09
45	292,3856	2081,456	-735661,8	4,56E+09	45	139,6709	1741,809	-600432	3,13E+09

46	421,4985	2108,138	-748166,8	4,84E+09	46	212,3696	2825,323	-1036912	8,23E+09
47	268,9318	2846,007	-1046296	8,45E+09	47	99,2439	2734,259	-999029,3	7,67E+09
48	193,2688	1422,192	-477632,4	2,13E+09	48	155,6493	2668,479	-972175,6	7,32E+09
49	398,9435	1620,455	-555236	2,86E+09	49	149,4181	3130,709	-1163604	1,01E+10
50	336,2589	2008,52	-707833,7	4,34E+09	50	146,9616	2785,797	-1020754	8,02E+09
51	323,3499	2507,461	-907247,9	6,57E+09	51	96,57762	2618,982	-951804,1	7,05E+09
52	245,8535	1079,012	-349551,8	1,27E+09	52	118,8442	2329,323	-834059	5,59E+09
53	243,1692	2500,567	-904128,6	6,5E+09	53	104,1401	3260,999	-1218066	1,09E+10
54	245,062	2410,763	-868277,8	6,11E+09	54	156,6414	2288,456	-817565,7	5,39E+09
55	238,9507	1325,06	-441177,9	1,87E+09	55	194,1679	2178,218	-773414,9	4,91E+09
56	243,0344	3050,427	-1130697	9,63E+09	56	163,2244	2329,531	-834468,3	5,62E+09
57	186,4568	2013,801	-708510,2	4,26E+09	57	132,8989	2176,076	-772335	4,87E+09
58	366,8177	2573,25	-934305,9	6,93E+09	58	169,2605	2468,533	-890558,3	6,28E+09
59	306,7908	2227,198	-793819,6	5,2E+09	59	140,4168	2770,067	-1014161	7,91E+09
60	325,0187	2462,937	-889181,9	6,34E+09	60	143,2242	2364,413	-848459	5,78E+09

LAMPIRAN 2 : SKRIP PROGRAM

a. Fungsi get_images

```
function images= get_images(drc)
    imagefiles = dir(drc);
    nfiles = length(imagefiles);
    for ii=1:nfiles
        namaFile{ii} = imagefiles(ii).name;
        img{ii} = imread(namaFile{ii});
    end
    images.img = img;
    images.namaFile = namaFile;
end
```

b. Fungsi Curvelet Transform

```
function CT = get_CT(imgsize,imagefiles)
    nfiles = length(imagefiles);
    for ii=1:nfiles
        img = imresize(imagefiles{ii},imgsize);
        imageGray=rgb2gray(img);%konvert grayscale
        tic; curva{ii} = fdct_usfft(imageGray,0); toc;
    end
    CT.curva=curva;
End
```

c. Fungsi Ekstraksi Ciri

```
function FE =get_FE(curva,level,methode)
    nfiles = length(curva);

    for ii=1:nfiles
        if strcmp(methode,'curva') || strcmp(methode,'param')
            if level==1 || level==length(curva{1, 1})
                get_Mean(ii) = mean(mean(curva{1, ii}{1, level}{1, 1}));
                get_Energy(ii) =calEnergy(curva{1, ii}{1, level}{1, 1});
                get_str_dv(ii) = mean(std(curva{1, ii}{1, level}{1, 1}));
                get_entropy(ii) = mean(EntropyManual(curva{1, ii}{1, level}{1, 1}));
            else
                count1 = length(curva{1, 1}{1, level});
                for iii=1:count1
                    g_Mean(iii) = mean(mean(curva{1, ii}{1, level}{1, iii}));
                    g_Energy(iii) =calEnergy(curva{1, ii}{1, level}{1, iii});
                    g_str_dv(iii) = mean(std(curva{1, ii}{1, level}{1, iii}));
                    g_entropy(iii) = mean(EntropyManual(curva{1, ii}{1, level}{1, iii}));
                end
                get_Mean(ii) = mean(g_Mean);
                get_Energy(ii) = mean(g_Energy(:));
                get_str_dv(ii) = mean(g_str_dv);
                get_entropy(ii) = mean(g_entropy);
            end
        else %koefisien, frekuensi, spatial
            get_Mean(ii) = mean(mean(curva{1, ii}));
            get_Energy(ii) =calEnergy(curva{1, ii});
            get_str_dv(ii) = mean(std(curva{1, ii}));
            get_entropy(ii) = mean(EntropyManual(curva{1, ii}));
        end
    end
    FE.mean =get_Mean;
```

```

FE.energy =get_Energy;
FE.entropy = get_entropy;
FE.std =get_str_dv;
-end

```

d. Fungsi Data Latih (SVMtrain)

```

function svm4_t =train_SVM(d,f)
Dmean = d.mean;
Dstd = d.std;
Denergy = d.energy;
Dentropy = d.entropy;

Dgmean = [Dmean, f.mean];
Dgstd = [Dstd, f.std];
Dgenergy = [Denergy, f.energy];
Dgentropy = [Dentropy, f.entropy];

xdata = [Dgmean(:), Dgstd(:), Dgenergy(:), Dgentropy(:)];
for i = 1:length(Dgmean)
    if i <= length(Dmean)
        group{i}='Defect';
    else
        group{i}='Fine';
    end
end
group=group(:);
%=SVMTRAIN FOR 4 INPUT=%
svm4_t = svmtrain(xdata,group);

svm4_t.xdataBaris = xdata;
svm4_t.group = group;
end

```

e. Fungsi Pengujian

```

function str = test0_SVM(svm4_t,image,imgsize,level,method)
imageTest= get_images(image);
CT = get_CT(imgsize,imageTest.img);
FE = get_FE(CT.curva,level,method);
=====
dm = FE.mean(:);
ds = FE.std(:);
de = FE.energy(:);
den = FE.entropy(:);

defect=0;fine=0;
svm4_co = svmclassify(svm4_t,[dm ds de den;]);
svm4_co = svm4_co(:);
=====
for count=1:length(dm)
    if strcmp(svm4_co(count),'Defect')
        defect = defect+1;
    else
        fine = fine+1;
    end
end
benar=0;salah=0;
for i=1:length(imageTest.namaFile)

```

```

        if strcmp(imageTest.namaFile{i}(1:3),'def') &&
strcmp(svm4_co(i),'Defect')
            benar=benar+1;
        elseif strcmp(imageTest.namaFile{i}(1:3),'fin') &&
strcmp(svm4_co(i),'Fine')
            benar=benar+1;
        else
            salah=salah+1;
        end
    end
    akurasi=benar*100/length(svm4_co);

clc();
disp('-----=Hasilnya-----');
disp(strcat('Accuracy:',string(akurasi),'%'));
disp(strcat('Total Sample:',string(length(dm))));
disp(strcat('defect:',string(defect)));
disp(strcat('free defect:',string(fine)));
disp('-----');
disp(strcat('data error:',string(salah)));
disp('-----Detail:-----');
for o=1:length(svm4_co)
    if strcmp(imageTest.namaFile{o}(1),'d') &&
strcmp(string(svm4_co{o}),'Defect')
        disp(strcat(imageTest.namaFile{o},' =
',string(svm4_co{o})));
    elseif strcmp(imageTest.namaFile{o}(1),'f') &&
strcmp(string(svm4_co{o}),'Fine')
        disp(strcat(imageTest.namaFile{o},' =
',string(svm4_co{o})));
    else
        disp(strcat('----->>',imageTest.namaFile{o},' =
',string(svm4_co{o}),'<<---data error---'));
    end
end
str.akurasi = akurasi;
str.HasilSVM=svm4_co;
end

```

f. Fungsi Start (fungsi untuk ngerunning program)

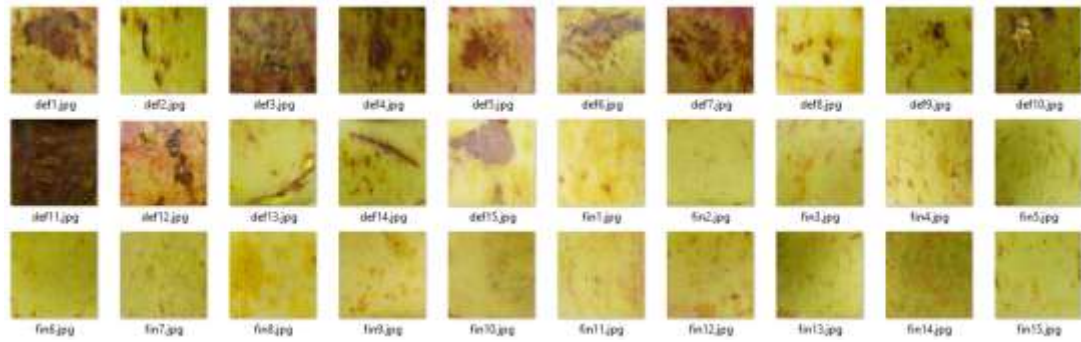
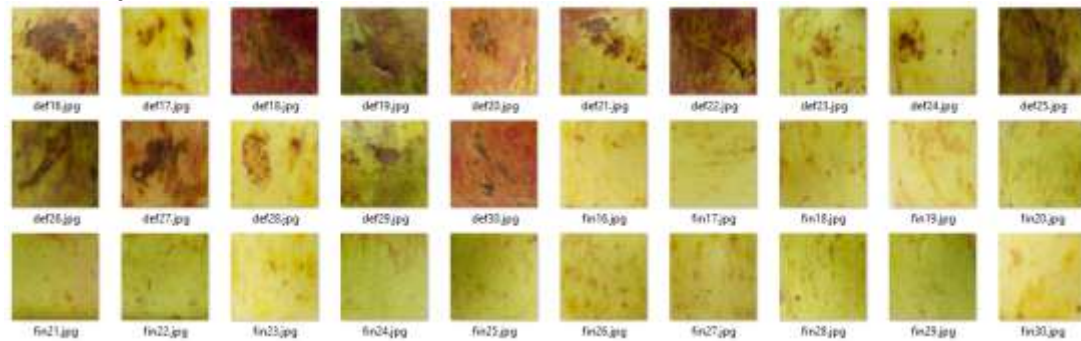
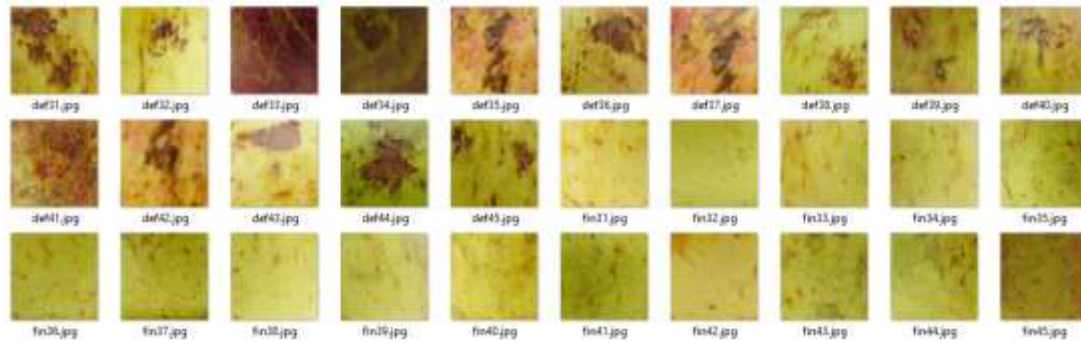
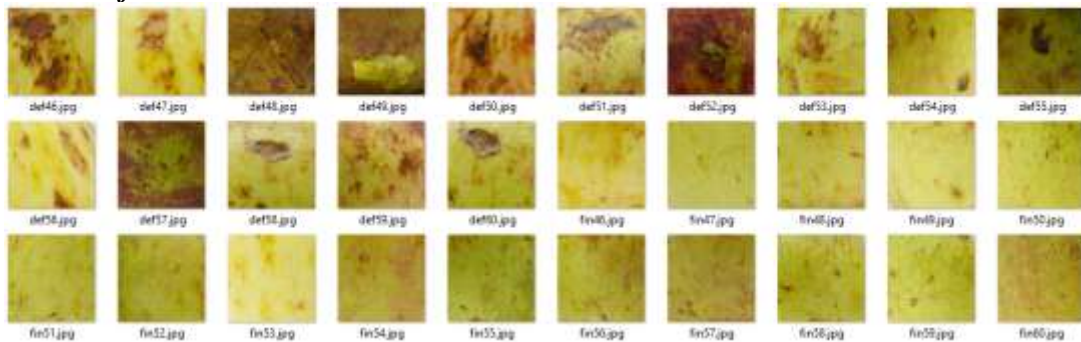
```

imagesDefect = get_images('def*.jpg');
imagesFine = get_images('fin*.jpg');
CT_f = get_CT([512 512],imagesFine.img);
CT_d = get_CT([512 512],imagesDefect.img);
FE_f = get_FE(CT_f.curva,1,'curva');
FE_d = get_FE(CT_d.curva,1,'curva');

% =====SVMTrain & Testing 4 Inputan=====
% training svm4
% svm4_t=train_SVM(FE_d,FE_f);

% classifikasi svm banyak gambar
% svm4_co = testingO_SVM(svm4_t,'def*.jpg',[512 512],1,'curva','defect');
% svm4_coA = testO_SVM(svm4_t,'*.jpg',[512 512],1,'curva');

```

LAMPIRAN 3 : CITRA Uji DAN CITRA LATIH**a. Citra *fold-1*****b. Citra *fold-2*****c. Citra *fold-3*****d. Citra *fold-4***

LAMPIRAN 4: CEK PLAGIARISME

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