CSE 3018 - Content Based Image Retrieval

Lab 6 - Implementation Of Gray Level Co-occurrence Matrix For Images

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Code:

```
energy1 = zeros(100,1);
entropy1 = zeros(100,1);
contrast1 = zeros(100,1);
indm1 = zeros(100,1);

energy2 = zeros(100,1);
entropy2 = zeros(100,1);
contrast2 = zeros(100,1);
indm2 = zeros(100,1);

energy3 = zeros(100,1);
entropy3 = zeros(100,1);
contrast3 = zeros(100,1);
indm3 = zeros(100,1);

name = zeros(100,1);
for a=1:100
        filename = strcat(int2str(a),'.jpg');
        name(a) = a;
        I = imread(filename);
        I = rgb2gray(I);
        glcm1 = graycomatrix(I,'Offset',[1 0]);
        glcm2 = graycomatrix(I,'Offset',[0 1]);
        glcm3 = graycomatrix(I,'Offset',[1 1]);
        glcm1n = glcm1/sum(sum(glcm1));
        glcm2n = glcm2/sum(sum(glcm2));
        glcm3n = glcm3/sum(sum(glcm3));
        for i=1:8
        for j=1:8
        if glcm1n(i,j) ~= 0
        energy1(a) = energy1(a) +  glcm1n(i,j)^2;
        entropy1(a) = entropy1(a) - glcm1n(i,j)*log(glcm1n(i,j));
        contrast1(a) = contrast1(a) + (i-j)^2*glcm1n(i,j);
        indm1(a) = indm1(a) + glcm1n(i,j)/(1+(i-j)^2);
        end
        if glcm2n(i,j) ~= 0
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        energy2(a) = energy2(a) +  glcm2n(i,j)^2;
        entropy2(a) = entropy2(a) - glcm2n(i,j)*log(glcm2n(i,j));
        contrast2(a) = contrast2(a) + (i-j)^2*glcm2n(i,j);
        indm2(a) = indm2(a) + glcm2n(i,j)/(1+(i-j)^2);
        end
        if glcm3n(i,j) ~= 0
        energy3(a) = energy3(a) +  glcm3n(i,j)^2;
        entropy3(a) = entropy3(a) - glcm3n(i,j)*log(glcm3n(i,j));
        contrast3(a) = contrast3(a) + (i-j)^2*glcm3n(i,j);
        indm3(a) = indm3(a)+ glcm3n(i,j)/(1+(i-j)^2);
        end
        end
        end
end

res =
[name,contrast1,contrast2,contrast3,energy1,energy2,energy3,entropy1,entropy2,entropy3,ind
m1,indm2,indm3];
head =
{'FileName','Contrast1','Contrast2','Contrast3','Energy1','Energy2','Energy3','Entropy1','Entropy2'
,'Entropy3','Inverse Difference1','Inverse Difference2','Inverse Difference3'};
```

Screenshot:

Filename	Contrast1	Contrast2	Contrast3	Energy1	Energy2	Energy3	Entropy1	Entropy2	Entropy3	INDM1	INDM2	INDM3
1	0.079181	0.085956	0.116167	0.389125	0.383295	0.369274	1.377368	1.401669	1.470427	0.96041	0.957022	0.941941
2	0.607932	0.717502	0.586027	0.089203	0.079622	0.083061	2.813393	2.904807	2.835154	0.806144	0.777181	0.793558
3	0.273744	0.343236	0.532081	0.115254	0.106301	0.089165	2.471575	2.559986	2.73853	0.878431	0.858291	0.8088
4	0.413147	0.871684	0.921312	0.088823	0.064362	0.124782	2.705293	3.022013	3.04922	0.817631	0.714615	0.702151
5	0.189369	0.170283	0.232177	0.126569	0.130103	0.118143	2.406056	2.368993	2.48454	0.911101	0.919294	0.892488
6	0.341718	0.375155	0.421794	0.298694	0.288722	0.276567	1.631721	1.661272	1.692403	0.835063	0.820703	0.801592
7	0.236982	0.280788	0.359662	0.142942	0.135172	0.125702	2.266541	2.330287	2.419414	0.89297	0.873743	0.848218
8	0.847677	0.839062	0.928671	0.216074	0.215189	0.209977	1.871346	1.871927	1.88371	0.737606	0.736918	0.719896
9	0.193312	0.047733	0.198201	0.406563	0.516701	0.40418	1.103922	0.818077	1.109502	0.903344	0.976134	0.900899
10	1.450238	1.361508	1.731924	0.237498	0.247201	0.229141	2.306921	2.282995	2.343069	0.724579	0.738615	0.707595
11	0.84554	0.900464	1.110234	0.102753	0.101128	0.093979	2.704066	2.724515	2.798117	0.73121	0.724484	0.693969
12	0.501439	0.536935	0.56832	0.136322	0.132316	0.126096	2.356317	2.388488	2.417138	0.797422	0.787634	0.774326
13	0.19988	0.194348	0.246812	0.61469	0.620392	0.599346	0.877052	0.866745	0.902665	0.917038	0.920382	0.904
14	0.991108	1.013742	1.125045	0.17326	0.173543	0.166811	2.21554	2.217701	2.237724	0.722188	0.721224	0.702783
15	0.160699	0.167484	0.222467	0.189534	0.187663	0.17338	2.018069	2.029524	2.12728	0.923534	0.920494	0.898512
16	0.295205	0.40479	0.273281	0.242232	0.213462	0.250763	1.804768	1.92251	1.774619	0.858583	0.817851	0.867979
17	0.156701	0.155918	0.207354	0.382993	0.385543	0.356857	1.381035	1.377717	1.468205	0.922082	0.922593	0.897745
18	0.248951	0.268916	0.312064	0.273843	0.26656	0.258139	1.995702	2.023592	2.069536	0.885403	0.876886	0.861267
19	0.3465	0.215289	0.373996	0.288623	0.340483	0.279532	1.525246	1.377815	1.546716	0.836062	0.893171	0.823556
20	0.111609	0.11524	0.155179	0.142374	0.140502	0.13032	2.216083	2.228589	2.321911	0.944219	0.94238	0.922507
21	0.456307	0.40303	0.556646	0.086866	0.092798	0.079588	2.773415	2.717478	2.858627	0.816492	0.832906	0.788509
22	0.813107	0.805273	1.060319	0.126069	0.123875	0.113249	2.747946	2.75441	2.851835	0.7463	0.744238	0.707084
23	0.110556	0.116944	0.148736	0.258931	0.258455	0.242702	1.663381	1.673914	1.751627	0.945817	0.943313	0.927473
24	0.145395	0.134259	0.177228	0.321687	0.324019	0.307137	1.53244	1.517675	1.596523	0.935353	0.939045	0.921995