**blank.m**

function X = blank(A)

X = zeros(1,180);

[m n] = size(A);

for i = 1 : m

if sum(A(i,:)~=255)==0

X(i) = 1;

end

end

end

**blank\_diff.m**

function X = blank\_diff

X = zeros(209, 209);

A = readin;

for i = 1:209

for j = 1:209

X(i, j) = sum(abs(blank(A{i})-blank(A{j})));

end

end

end

**find\_left.m**

function a = find\_left

A = readin;

T = [];

for i = 1:209

B = A{i};

if(isempty(find(B(:,1)<255, 1)))

T = [T i];

end

end

a = T;

end

**join.m**

function join

A = readin;

for i = 1:17

T = csvread(num2str(i,'r%d.txt'));

I = [];

for j = 1:length(T)

% disp(T(j));

I = [I A{T(j)}];

end

imwrite(I, num2str(i, 'r%d.bmp'));

end

end

**readin.m**

function A = readin

A=[];

for i = 0:208

A{i+1} = imread(num2str(i,'%03d.bmp'));

end

end

**rebuild.m**

function Ret = rebuild

C = zeros(1,209);

B = similar;

A = readin;

global U;

U = zeros(1,209);

% for i = 1:209

% m = max(B(i,:));

% t = find(B(i,:)==m);

% [t1, t2] = size(t);

% if t2 > 1 || B(i, t) == 0

% C(i) = 0;

% else

% C(i) = t;

% end

% end

% disp(C(1));

% C = [138 88 58 160 102 93 178 209 106 9 105 23 74 183 129 134 185 0 0 79 53 174 130 148 36 10 2 61 92 65 42 52 197 203 85 82 0 76 149 32 152 24 125 0 207 175 162 122 38 55 180 108 37 57 66 45 94 193 44 0 0 20 143 117 112 0 107 70 176 100 167 157 7 161 0 56 0 113 0 64 34 190 200 133 184 153 196 19 168 147 48 189 181 154 35 12 132 137 173 163 77 114 155 131 99 75 151 116 118 198 188 202 150 195 41 177 164 5 191 124 87 43 104 0 145 14 69 59 4 29 194 80 201 171 40 13 165 54 159 146 186 0 31 187 78 0 0 192 47 98 22 208 166 71 115 141 84 182 127 83 204 25 97 73 128 28 33 26 101 135 206 60 172 158 1 46 0 21 119 121 49 205 110 91 111 109 3 67 142 123 96 51 179 89 120 27 0 17 16 0 18 6 199 170 140 86 11 156 139 ];

C = csvread('match.txt');

T = [find\_left 103];

for i = 1 : length(T)

do\_rebuild\_lr(A, B, C, T(i), i);

end

disp(sum(U));

Ret = U;

% disp(U);

end

function do\_rebuild\_lr(A, B, C, t, idx)

T = [];

TR = [];

global U;

U(t)=1;

while true

T = [T A{t}];

TR = [TR t];

t=C(t);

% disp(t);

if(t==0)

break;

end;

if(U(t))

disp('used', t);

break;

end;

U(t) = 1;

end

imwrite(T, num2str(idx, 'r%d.bmp'));

% imshow(T);

% disp(TR);

csvwrite(num2str(idx, 'r%d.txt'), TR);

end

function do\_rebuild\_rl(A, B, C, t, idx)

T = [];

TR = [];

global U;

while true

T = [A{t}, T];

TR = [t, TR];

U(t) = 1;

% disp(size(t));

X = find(C == t);

% disp(X);

if(isempty(X))

break;

end

if(length(X) > 1)

BB = B(X,t);

t = X(BB==max(BB));

if(length(t)>1)

t=t(1);

end

else

t=X;

end

if(t==0)

break;

end;

end

imwrite(T, num2str(idx, 'r%d.bmp'));

% imshow(T);

disp(TR);

end

**similar.m**

function [LR, UD] = similar

A = readin;

LR = zeros(209,209);

UD = zeros(209,209);

for i = 1:209

for j = 1:209

if i ~= j

LR(i,j) = sim\_lr(A{i}, A{j});

UD(i,j) = sim\_ud(A{i}, A{j});

end

end

end

end

function [result, tot] = calc\_sim(A, B)

tot = 0;

hit = 0;

for i = 1:length(A)

if A(i) < 255

tot = tot + 1;

if ((B(i) < 255) || ( i-1 > 0 && B(i-1)<255 ) || ( i+1 <= length(A) && B(i+1)<255 ))

hit = hit + 1;

end

end

end

if tot == 0

result = 0;

else

result = hit/tot;

end

end

function result = sim\_lr(A, B)

[result1, w1] = calc\_sim(A(:, 72), B(:, 1));

[result2, w2] = calc\_sim(B(:, 1), A(:, 72));

if(w1+w2==0)

result = 0;

else

result = (result1\*w1 + result2\*w2) / (w1+w2);

end

%result = result1;

end

function result = sim\_ud(A, B)

[result1, w1] = calc\_sim(A(180, :), B(1, :));

[result2, w2] = calc\_sim(B(1, :), A(180, :));

if(w1+w2==0)

result = 0;

else

result = (result1\*w1 + result2\*w2) / (w1+w2);

end

end

**a.m**

function B = a

A=[];

for i = 1:11

A{i} = imread(num2str(i,'r%d.bmp'));

end

B = zeros(11,11);

for i = 1:11

for j = 1:11

if i ~= j

B(i,j) = sim(A{i}, A{j});

end

end

end

C = zeros(1,11);

for i = 1:11

m = max(B(i,:));

t = find(B(i,:)==m);

[t1, t2] = size(t);

% disp(size(t));

if t2 > 1

C(i) = 0;

else

C(i) = t;

end

end

% disp(C);

K = find(C==0);

% disp(K);

for k = 1 : length(K)

t = K(k);

T = [A{t}];

TT = [t];

while true

if(isempty(t))

break;

end

[tt, t] = find(C == t);

T = [A{t}; T];

TT = [t TT];

end

if(~isempty(T))

imwrite(T, num2str(k,'rr%d.bmp'));

end

R = [];

for j = TT

disp(j);

X = csvread(num2str(j, 'r%d.txt'));

R = [R;X];

end

csvwrite(num2str(k, 'rr%d.txt'), R);

% imshow(T);

end

end

function result = sim(A, B)

tot = 0;

hit = 0;

for i = 1:1368

if A(180,i) < 255

tot = tot + 1;

if B(1,i) < 255

hit = hit + 1;

end

end

end

if tot == 0

result = 0;

else

result = hit/tot;

end

end

**rebuild.cpp**

#include <cstdio>

#include <cstdlib>

#include <cstring>

#include <cmath>

#include <algorithm>

#define maxn 215

using namespace std;

const int n = 209;

double g[maxn][maxn];

int match[maxn],m,bd[maxn][maxn];

bool ur[maxn];

struct A

{

double v;

int x,y;

};

A arr[n\*n];

int cmp(const A &x, const A &y)

{

return x.v>y.v;

}

void adjust()

{

g[15][129]=1;

g[183][110]=1;

g[90][147]=1.1;

g[155][115]=1;

}

int main()

{

freopen("LR.txt", "r", stdin);

for(int i=1;i<=n;i++)

for(int j=1;j<=n;j++)

scanf("%lf", g[i]+j);

adjust();

for(int i=1;i<=n;i++)

for(int j=1;j<=n;j++){

//scanf("%lf", g[i]+j);

arr[m].v = g[i][j];

arr[m].x = i;

arr[m++].y = j;

}

sort(arr, arr+m, cmp);

freopen("BD.txt", "r", stdin);

for(int i=1;i<=n;i++)

for(int j=1;j<=n;j++)

scanf("%d", bd[i]+j);

for(int i=0;i<m;i++)

if(!match[arr[i].x] && !ur[arr[i].y] && (bd[arr[i].x][arr[i].y]<25||arr[i].v>=0.95))

{

match[arr[i].x] = arr[i].y;

ur[arr[i].y] = 1;

}

freopen("match.txt", "w", stdout);

for(int i=1;i<=n;i++)

printf("%d%c", g[i][match[i]]==0?0:match[i],i==n?'\n':',');

return 0;

}