***CONVERTION OF IMAGE INTO BINARY FORMAT WITH DISTANCE MATRIX:***

***The following is the code to convert an image (jpg file) to binary:***

#include "Converter.h"

#include <iostream>

#include <fstream>

#include <conio.h>

#include <string>

using namespace std;

Converter::Converter(void)

{

}

Converter::~Converter(void)

{

}

void Convert(int, char[]);

int main()

{

ofstream binaryfile;

ifstream image;

ofstream asciifile;

asciifile.open("AsciiFile.jpg", ios::app);

binaryfile.open("binaryfile.bin", ios::app);

image.open("C:\\Users\\RayyanTahir\\Desktop\\image.jpg", ios::binary);

while(image.good())

{

char Binary[8] = {'\0'};

char c = image.get();

int ascii = (unsigned int)c;

ascii = abs(ascii);

asciifile << c;

Convert(ascii, Binary);

binaryfile << Binary;

binaryfile << " ";

}

if(binaryfile.is\_open())

{

binaryfile.close();

cout<<"\n\nbinary file closed\n";

}

if(asciifile.is\_open())

{

asciifile.close();

cout<<"ascii file closed\n";

}

if(image.is\_open())

{

image.close();

cout<<"Image closed";

}

\_getch();

return 0;

}

void Convert(int ascii, char binary[])

{

char reversed\_binary[8];

int index = 0;

if(ascii == 0)

{

for(int i = 0; i < 8; i++)

{

binary[i] = '0';

}

}

else

{

while(ascii != 1)

{

if(ascii % 2 == 0)

{

reversed\_binary[index] = '0';

}

else if(ascii % 2 == 1)

{

reversed\_binary[index] = '1';

}

index++;

ascii /= 2;

}

if(ascii == 1)

{

reversed\_binary[index] = '1';

index++;

}

while (index < 8)

{

reversed\_binary[index] = '0';

index++;

}

for(int a = 0; a < 8; a++)

{

binary[a] = reversed\_binary[7 - a];

}

}}

DISTANCE TRANSFORM MATRIX:

The distance transform can be calculated by the following method called city block distance

D4(pq) = |x1-x2| + |y1-y2|

The distance matrix would be:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **a** | **b** | **c** | **d** | **e** | **f** |
| **a** | 0 | 184 | 222 | 177 | 216 | 231 |
| **b** | 184 | 0 | 45 | 123 | 128 | 200 |
| **c** | 222 | 45 | 0 | 129 | 121 | 203 |
| **d** | 177 | 123 | 129 | 0 | 46 | 83 |
| **e** | 216 | 128 | 121 | 46 | 0 | 83 |
| **f** | 231 | 200 | 203 | 83 | 83 | 0 |

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