CSE 3113 / CSE 3214

INTRODUCTION TO DIGITAL IMAGE PROCESSING

SPRING 2023

Midterm Assignment Report

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Submission Date: *6 April 2023*

Programming Language	☑ *Python* ☐ *Matlab* ☐ *Octave*
Programming Environment	Pycharm IDE with Python 3.11
Secret Key	What I love about science is that as you learn, you don't really get answers. You just get better questions.
Reflections	I learned that type casting is the real headache in python. You need to be extra careful with those.

Source Code

```
from PIL import Image
import numpy

def get_the_message(image, sentinel):
    image = Image.open(image)
    width, height = image.size
    bitplane = numpy.zeros((height, width))
    for x in range(width):
        for y in range(height):
            pixel = image.getpixel((x, y))
            lsb = pixel & 1
            bitplane[y, x] = lsb

    message = ""
    bitbuffer = ""
    for i in range(height):
        for j in range(width):
            bitbuffer = bitbuffer + str(int(bitplane[i,j]))
            if len(bitbuffer) == 8:
                character = chr(int(bitbuffer, 2))
                if character == sentinel:
                    break
                else:
                    message = message + str(character)
                    bitbuffer = ""

    return message

print(get_the_message('67.tif', '%'))
```