HTML

<script src="https://www.dukelearntoprogram.com/course1/common/js/image/SimpleImage.js" >

</script>

<h1>Filter Fun</h1>

<canvas id="theCanvas">

</canvas>

<h2>Load Image</h2>

<input type="file" multiple="false" accept="image/\*" id="fileInput" onchange="loadImage()" >

<h2>Choose Filter</h2>

<p>

<input type="button" value="Grayscale" onclick="doGray()" >

<input type="button" value="Red" onclick="doRed()" >

</p>

<p>

<input type="button" value="Reset Image" onclick="reset()" >

</p>

CSS

body {

background-color: wheat;

margin: 30pt;

}

canvas {

border: 1pt solid dimgray;

height: 200px;

}

input {

font-size: 12pt;

}

JavaScript

var originalImage = null;

var grayImage = null;

var redImage = null;

var canvas = document.getElementById("theCanvas");

function loadImage() {

var file = document.getElementById("fileInput");

originalImage = new SimpleImage(file);

grayImage = new SimpleImage(file);

redImage = new SimpleImage(file);

originalImage.drawTo(canvas);

}

function doGray() {

if (imageIsLoaded(grayImage)) {

filterGray();

grayImage.drawTo(canvas);

}

}

function filterGray() {

for (var pixel of grayImage.values()) {

var avg = (pixel.getRed() + pixel.getGreen() + pixel.getBlue()) / 3;

pixel.setRed(avg);

pixel.setGreen(avg);

pixel.setBlue(avg);

}

}

function doRed() {

if (imageIsLoaded(redImage)) {

filterRed();

redImage.drawTo(canvas);

}

}

function filterRed() {

for (var pixel of redImage.values()) {

var avg = (pixel.getRed() + pixel.getGreen() + pixel.getBlue()) / 3;

if (avg < 128) {

pixel.setRed(2 \* avg);

pixel.setGreen(0);

pixel.setBlue(0);

} else {

pixel.setRed(255);

pixel.setGreen(2 \* avg - 255);

pixel.setBlue(2 \* avg - 255);

}

}

}

function reset() {

if (imageIsLoaded(originalImage)) {

originalImage.drawTo(canvas);

grayImage = new SimpleImage(originalImage);

redImage = new SimpleImage(originalImage);

}

}

function imageIsLoaded(img) {

if (img == null || !img.complete()) {

alert("Image not loaded");

return false;

} else {

return true;

}

}