

University of London
Creative Computing
CO2227 Creative computing II: interactive multimedia
Coursework assignments 2018-19

Introduction

The following coursework assignments provide an opportunity for you to obtain a broader and deeper understanding of some of the material in this unit.

Both assignments that you will attempt this year will help you develop your understanding of the concepts in the Creative Computing courses, as well as extending your technical and creative ability. The first has a focus on colour and perception, and strengthens your technical abilities, while the second is about filtering and gives an opportunity to work on your creative skills.

Your submissions will be assessed for how successfully they fulfil their briefs, the technical content of the sketches, the clarity of your written descriptions, and any additional added value. We will also continue to develop your ability to critically evaluate your own and others' work.

Academic approach to discussion questions

You are expected to approach the coursework assignments in this unit in a rigorous and academic way. While it is fine to use Internet search tools and Wikipedia to obtain a broad understanding of a topic, it is also essential that you use reliable academic references to obtain your information.

In any essay that you write, you must make sure that you use and cite your reference material appropriately. You can look at the end of any journal or conference paper to get an idea of how to do this.

We also expect you to approach the work in an informed and critical manner, and to develop an ability to form views based on evidence (substantiating any strong claims you may make), and to argue in support of your claims.

It is important that your submitted assignment is your own individual work and, for the most part, written in your own words. You must provide appropriate in-text citation for both paraphrase and quotation; with a detailed reference section at the end of your assignment, (this should not be included in the word count). Copying, plagiarism and unaccredited and wholesale reproduction of material from books or from any online source is unacceptable, and will be penalised (see: [How to avoid plagiarism](#)). You may find it helpful to look at the end of any journal or conference paper to get an idea of how to cite your reference material appropriately.

If you make use of any code that you have not written yourself — whether you use it as is, or make modifications to it — it is essential that you acknowledge this properly. Likewise, you are free to use material from the Creative Commons, but you must respect and adhere to any licensing information that is associated with the material.

General requirements

You should expect to spend around 20-40 hours on each coursework assignment, in order to produce work that will obtain an average grade. If you hope for a higher grade, it is possible that you will need to spend more time on the work; and if you spend less time, then it is likely you would obtain a lower grade.

Sometimes the brief you are given is quite broad. In these cases part, of what the examiners are assessing is your ability to focus and constrain your work in an appropriate way. It is therefore important that your discussions clarify any of the choices you have taken.

Submission

Completed coursework assignments are to be uploaded to the VLE for submission. In general:

- essays and discussions must be in the form of a `PDF`, and all answers of this form must be combined into an appropriately sectioned single `PDF`;
- any *Processing* sketches should be in a ready-to-run form (which may mean that you have to submit them as a `ZIP` files containing an appropriate `Data` folder); and
- it is essential that you comment any code that you submit. Uncommented or weakly commented code submissions attract significantly lower marks.

Portfolio

You may wish to use the creative work from your assignments as the basis for developing an item in your portfolio; see the appropriate sections of the Subject guide and the Portfolio booklet for details.

Coursework assignment 1 – Colour and perception

This assignment is to help you to develop your understanding of digital visual processing, including colour and perception. The exercises and questions that follow explore device-dependent colour spaces and some related perceptual aspects of colour vision.

Part A: converting between HSB and RGB colour spaces.

The first part of this coursework requires you to implement the mathematical transformations to convert between the HSB and RGB colour spaces.

1. Write a *Processing* sketch including a function that converts from an RGB representation of a colour to HSB, and some way for the user of your sketch to specify an input colour. You will need to choose an appropriate data structure for your colours; one possibility is a *Processing* class, but there are others. Do not make use of the *Processing* built in functions for conversion, as the aim of this exercise is to understand the mathematical links between the two spaces. You may use an existing algorithm and provide the code to implement this, but be sure to acknowledge your source if you do so.
2. Implement for your sketch the reverse conversion, from HSB to RGB. Again, provide for the user of your sketch some way to specify an input HSB colour to this conversion.
3. Test whether your conversions agree with the built-in conversions in *Processing*, using the various colour accessors or `colorMode()`. If you observe a difference, try to explain why.

For this part, submit your code in appropriately named zipped files, and your description and discussion of the work labelled **Part A** in the single PDF that contains all of your written submission.

[18%]

Part B: Colour mixing by area

1. Write a *Processing* sketch which fills a 100 x 100-pixel square with a checker-board pattern of pixels, alternately full red (the maximum value in red, and zero in the green and blue channels) and full yellow (maximum values in red and green, and zero in blue).
2. Run your sketch and step far enough back from the screen that the pixellation is no longer obvious. What colour does the square appear to be?
3. Make a guess at the RGB values of the mixture colour in question 2 above. By trial and error, find the RGB colour values of the single colour that best matches the mixture. Was your guess right? Try to explain any discrepancy.
4. Repeat this with some other colours. Make a table of the colour values in the mixture, and the closest match in RGB colour space to the mixture that you find.

Again, submit your code in a zipped file, and your discussion of all of the above, appropriately sub-sectioned but with the main section heading **Part B**, in the single PDF that contains all of your written answers.

[20%]

Part C: visual perception

This part is about exploring a particular effect of the low-level details of visual perception.

1. Construct a *Processing* sketch that works on a colour image to display alternately (switching under user control): a greyscale version of that image, and a version of that image with the hue inverted (but saturation and value unchanged).
2. Select an image from your own collection or from the Commons, ideally with many strong colours. Incorporate it into your sketch.
3. Run your sketch, displaying the inverted hue version. Stare at a fixed point in the image for a few seconds, before switching (without moving your focus) to the greyscale version. What do you observe? (You might want to draw a small black dot to enable you to focus on a fixed location without distraction).

As before, submit your code, and your written discussion as appropriate (headed **Part C**, including demonstrations of the image and the changes made to it.

[20%]

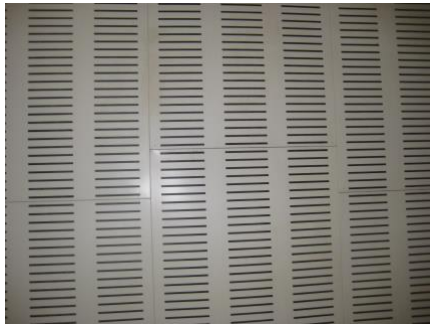
Part D: Reducing the size of an image

Implement reducing the size of an image by a linear factor of eight (*i.e.* from 3072×2304 pixels to 384 × 288) in two different ways:

- considering 8 x 8 square blocks of pixels, and preserving only the upper-left pixel from each block;
- considering 8 x 8 square blocks of pixels, and averaging the sixty four pixels' colour values.

Run your reducing sketches on the image (taken by C. Rhodes at King's Cross St Pancras, on 23rd November 2010) below. The image is available for download from the VLE. (You should also test your sketches on other images to make sure that they function as specified above, and are not only usable on the image given.)

For your submission to this part, include: your *Processing* sketch code; the reduced images resulting from running your sketch on the accompanying source image; and a report including a description of how your code works, an explanation of any choices you made, and any observations you have regarding the output images.



[30%]

Part E: creative development

Think about the previous four exercises (Parts A, B, C and D), and consider how you might take one of them forward in a creative way. You don't have to implement your ideas, but you should be as clear and concrete as possible about the intent, the hoped-for impact, and the technical and coding requirements that would be involved. Submit this as **Part E** in the PDF document containing your written responses to this coursework.

[10%]

Part F: swap partner

Identify a fellow student who you will be able to swap coursework assignments with after the submission date for this coursework has passed. Make sure the other student knows that you wish them to be your partner, and that the wish is mutual. Submit three things for this part: your swap-partner's name, their UoL student number, and a very brief description of how you know them.

Students at a teaching centre may choose a classmate, but this is not compulsory and any student taking the course this year is permissible. For students studying independently, the VLE is your best bet for finding a student to partner with on this part of the coursework.

Although this part is worth a very small number of marks, it is **not** optional. If you do not complete this part, you will not be able to complete coursework assignment 2.

[2%]

[Total: 100%]

Submit the following by uploading to the VLE:

1. A **single PDF document** of your written assignment submission, containing your written answers to all the questions and discussions asked for. The file should be named using the following convention: `YourName_SRN_CO2227cw1.pdf`, where `YourName` and `SRN` are your full name as it appears on your student record, and your UoL student number respectively. Make sure you clearly indicate, through headings, which parts of the PDF are answering which questions.
2. **ZIP files** for all of the code answers to the assignment, called `YourName_SRN_CO2227cw1_xxxx.zip`, where `xxxx` is a different but meaningful name for each sketch submitted. Each zip file should contain one directory that has all `.pde` file(s) and any associated data files for the relevant sketch, and must be able to be run once it has been unzipped — that is, all files and data should be in the correct place in the file hierarchy.

[END OF COURSEWORK ASSIGNMENT 1]

Coursework assignment 2 – Filtering

Your task for this coursework assignment is to look at the concept of filtering, and how it is applied in an artistic and creative context. Filtering is a very broad idea, which essentially covers the concept of choosing (usually in order to eliminate) items or properties that satisfy particular criteria. In the subject guide, you look at examples of filtering to obtain particular effects in images and sound. Another (very different kind of) example of filtering can be seen in John Maeda's *Text Squeezer* (<https://maedastudio.com/oldindex.php>). There are whole hosts of other things that can be seen as filtering, and the second and third parts of this coursework require you to investigate aspects of these. First, however, you will develop your own ability to critique work from both a technical and effectiveness perspective.

Part A: critique

In coursework assignment 1, you were required to complete some coding and discussion exercises about colour spaces, and perception. Using the work (code developed and accompanying report) that you obtained from the fellow student identified before submission, you should now perform your own critique of their work. You should obtain their submission, and you are to critique each of the first five parts.

Remember that critique does not mean simply finding fault. In order to properly critique something, you need to understand the broad area (which you should, from having done the work for your own coursework assignment), and you need to evaluate the strengths and weaknesses of the work in that context. You should also comment on the proposal in Part E, in terms of the intent and approach proposed.

Please submit your critique or evaluation as part of a .pdf, according to the instructions given below. Make sure you clearly identify, again, the name of the student whose work you are critiquing; if you need to change this from the one you identified in your submission for Coursework Assignment 1, you must get in touch with us through the VLE to explain the reasons for the change. At the end of the critique, you should include a general grade that you would award to the work. Do this for each of the sections, and then for the submission overall. Please note that the grades you award will have no effect on the grade that the University of London Examiners awards your fellow student; this is simply for you to give us an indication of how you rate this work.

[15%]

Part B: essay about filtering

Your task for this part of the coursework is to discuss the use of filtering in the making of creative artefacts in the digital world. Credit will be given for insightful analysis, a well-structured essay, and the use of appropriate examples. At this level, appropriate academic writing is essential.

The remit is a very broad one, so part of what you will be assessed on is your ability to focus and constrain what you present, to be coherent and non-trivial. The essay should be a maximum of 3000 words in length, though a shorter essay that is strong is perfectly acceptable.

[25%]

Part C: creative artefact

Using what you presented in Part B of this coursework assignment, design an artefact using *Processing*, that makes use of filtering in a creative way. Your sketch may use work from the Creative Commons as source materials provided any licensing terms are adhered to, or you may make use of an artefact or item (or more than one) designed from scratch by you. It is essential that what you develop is related to the discussion you've presented above.

As your submission to this part, include your *Processing* sketch, any source materials along with origin and attribution, and a description of how your sketch makes use of the idea of filtering to produce an engaging artefact. You should include your assessment of impact. Marks will be awarded for work in which the relation between your background reading and discussion (presented in part B) and your artefact and discussion, are clear, as well as for any innovation and insight that you demonstrate.

[60%]

[Total: 100%]

Submit the following by uploading to the VLE:

1. **A single PDF document** of your written assignment submission, containing your written answers to all the questions and discussions asked for. The file should be named using the following convention: `YourName_SRN_CO2227cw2.pdf`, where `YourName` and `SRN` are your full name as it appears on your student record, and your UoL student number respectively. Make sure you clearly indicate, through headings, which parts of the PDF are answering which questions.
2. **A single ZIP file** called `YourName_SRN_CO2227cw2_Part2.zip`, containing one directory called `Filtering`, which contains all `.pde` file(s) and any associated data files for the sketch you developed for Part 2. The main `.pde` file should be called `Filtering.pde`.

[END OF COURSEWORK ASSIGNMENT 2]