COMP9517: Computer Vision

2024 T2 Lab 1 Specification

Maximum Marks Achievable: 2.5

This lab is **worth 2.5% of the total course mark**.

> The lab must be submitted online.
> Instructions for submission will be posted closer to the deadline.
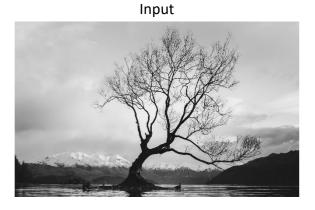> **Deadline for submission is Week 3, Friday 14 June 2024, 18:00:00.**

Objective: This lab revisits important concepts covered in the Week 1 and Week 2 lectures and aims to make you familiar with implementing specific algorithms.

Software: You are re   it your code as a Jupyter notebook (se   tutor consultation session this week, yo   l, and you can ask any questions you ma

Materials: The sampl   MS3.

Submission: All code   ubmit your source code as a Jupyter not   rs to all questions (see coding requireme   e. The submission link will be announce

Task 1 (0.75 mark)

Your friend has been   n Brightness" that involves creating and comparing images with their "antiforms". He has captured a nice picture of a dark tree against a bright sky and snowy mountains during daylight (see the picture below on the left) and he asks you to help him with his project.
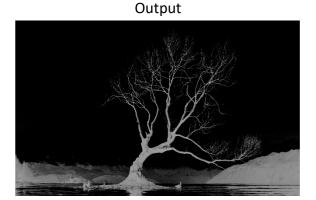
The idea is to create a nighttime version of the picture, where the tree and its immediate surroundings are illuminated but the background is now dark (see the result below on the right). Use intensity inversion and gamma correction to accomplish this task.

In your notebook, display the input and the final output image side by side.

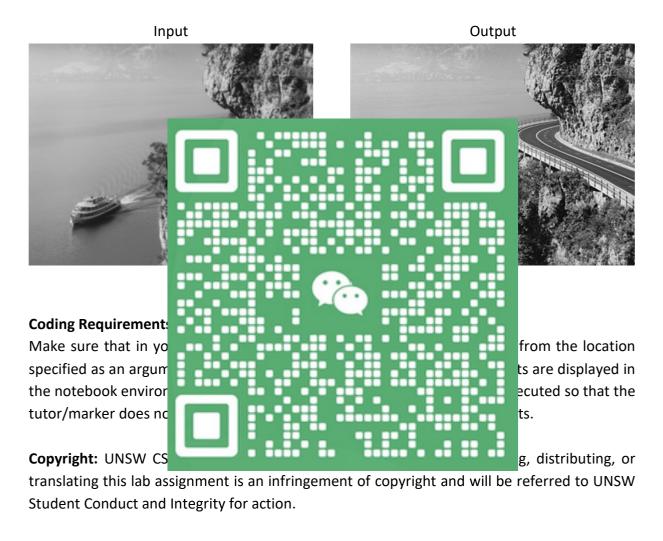| Input	Output

Task 2 (0.75 mark)

Your friend's family went on a vacation to Europe and took a lot of family photos. When they returned home and looked through their photos, they saw the camera bugged out and one of the photos (see below) was very noisy. You are asked to help them restore the photo.

As you remember fro[...]tering methods to reduce noise in imag[...]ering. Experiment with these filtering m[...]n this photo.

In your notebook, dis[...]e by side, mention which filtering metho[...]principles taught in the course why thi[...]

Inp[...]

Task 3 (1 mark)

Another one of your friend's vacation pictures (see below) was a bit blurred. You remember from the course that there are different methods to sharpen images, such as unsharp masking and by using the Laplacean filter, so you decide to try these out.

In your notebook, display the blurred input photo and the corrected photo side by side, mention which sharpening method you have used, and explain based on the underlying principles taught in the course why this method is the right choice.

Input	Output

Coding Requirements

Make sure that in yo[...] from the location specified as an argum[...] ts are displayed in the notebook environ[...] ecuted so that the tutor/marker does no[...] ts.

Released: 3 June 2024