Assignment One:
Computational Photography [1]

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Submit a **report** about your work for this assignment by the due date (as announced in lectures). This assignment will contribute 10% towards your final marks. Solutions and results may be presented in seminars.

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Curve Tool for Video Editing

Example for the use of the *curve tool* in *Adobe Photoshop*

This assignment requires you to implement a curve tool for video editing.

- Try out *Adobe Photoshop* and estimate the mechanism of the "Curve" tool.
- Design and implement such a curve tool for video editing.
- Test your program on a video of `Harbour bridge`, see `ccv.wordpress.fos.auckland.ac.nz/eisats/set-9/` (recorded by one of the three cameras)

Curve Tool in *Adobe Photoshop*

- The curve tool is a flexible function for controlling the brightness or contrast of an image.
- This tool acts on the histogram of the image.
- You may try out in *Adobe Photoshop* first for figuring out the specific mechanism of the tool.
- For a 30 days free trial of *Adobe Photoshop CS6*, download from `helpx.adobe.com/x-productkb/policy-pricing/` `cs6-product-downloads.html`

Tasks

In short, for this assignment you do the following:

- Implement a curve tool for video editing.
- You may use OpenCV to achieve some basic operations such as file I/O or histogram mapping.
- (**Optional**) Design a preview interface to confirm the effect before applying a specified curve tool to a whole video clip. For example, in the preview show the effect of the specified curve on the first frame of the video clip.

Test Your Program

The test video

- Test your program on the specified video of Set 9 of EISATS
- This video clip is in general dark and low contrast. Try to make it look better using your curve tool.

Report

To finalize your report,

- start with identifying yourself and provide a title for your report,
- describe your work on about 2-3 pages,
- include samples of outputs of your program into this report on 1-2 additional pages, possibly have references included,
- do not copy from somewhere without proper citation and reference, but aim at writing in your own words;
- Your report is 5 pages at most.
- Submit sources and report (in pdf format) in one zip file.