



NTNU

TDT4195 - VISUAL COMPUTING FUNDAMENTALS

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# Exercise book

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# 1 | Exercise 1

All tasks are implemented in Python using the SciPy-stack. Image data is parsed into Numpy arrays and processed using a combination of built-in functions from SciPy and functions we have implemented ourselves.

## Task 3 - Basic Image Manipulation

### 1 - Correct an image using a flatfield image

Listing 1.1 shows the two relevant functions implemented for this task. For the complete implementation including reading the image files and saving/showing the end result, see the file `flatfield.py`.

Listing 1.1: Flatfield image correction

```
def normalize_bw(img_matrix):  
    return map(lambda row: map(lambda val: val / 255, row), img_matrix)  
  
def correct_with_flatfield(img, flatfield):  
    corrected = deepcopy(img)  
    for y, (a_row, b_row) in enumerate(zip(img, flatfield)):  
        for x, (a_px, b_px) in enumerate(zip(a_row, b_row)):  
            corrected[y][x] = a_px / b_px  
  
    return corrected
```

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