

# MTD362 Digital Imaging – WS 2020/21

## Lab Report 3

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### Abstract

This lab unit deals with various interesting problems ... (give a short summary of the specific topics addressed). If you decide to write your report in German, make sure to change the `\documentclass` parameter from `english` to `german`. If you write in MS Word (and such), try to use a similar structure.

## 3.1 The first assignment

Describe the goals of the assignment briefly in your own words (i.e., do not just copy-paste the assignment text). In general, try to describe

- the task or problem to solve;
- the details of your solution, key ideas, steps involved, math, algorithms, references, ...;
- tests used to validate your solution and/or performance.

### 3.1.1 Structuring

This LaTeX document is based on the `HagenbergThesis` template, whose most recent version can be found on GitHub.<sup>1</sup>

The document uses the custom class `hgreport` which is based on LaTeX's standard `report` document class. Each lab unit (weekly assignment) corresponds to one `chapter`. Use `\setcounter{chapter}{n}` in the document's preamble to set the *lab unit number* to `n`. Note that the `\chapter` command itself is deactivated. Use `section{..}` at the beginning of each *assignment*. For individual *subtasks* use the `\subsection{..}` command, as shown here.

### 3.1.2 Literature

Use *references* to literature or online resources whenever you found something relevant. For example, the textbook recommended for this course is [1].

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<sup>1</sup><https://github.com/Digital-Media/HagenbergThesis>

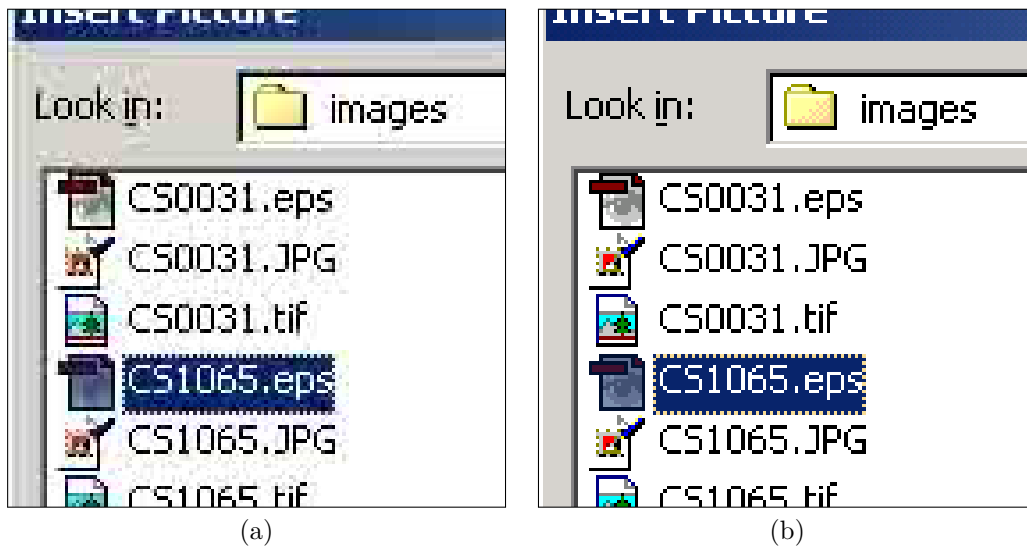
### 3.1.3 Mathematical elements

Use mathematical expressions wherever appropriate, either in-line (e.g.,  $e = m \cdot c^2$ ) or in the form of displayed equations, such as

$$e = m \cdot c^2. \quad (3.1)$$

### 3.1.4 Pictures, figures

Uses figures to show your test images, results, screen shots etc., noting that (with the given setup) only graphics in PNG, JPEG and PDF format can be directly included (see Fig. 3.1). See the thesis template for more details. All images are set up to reside in the `images/` subdirectory. However, it may be a good idea to create a specific image folder for each assignment.



**Figure 3.1:** Example for including images in a figure. Explain what is shown in (a) and (b), respectively.

### 3.1.5 Including code

Include relevant code snippets as shown in this Java example:

```
import ij.ImagePlus;
import ij.plugin.filter.PlugInFilter;
import ij.process.ImageProcessor;

public class Filter_Demo implements PlugInFilter {

    public int setup(String arg, ImagePlus imp) {
        return DOES_ALL; // works for any type of image!
    }

    public void run(ImageProcessor ip) {
```

```
float[] H = {    // this is a 1D array!  
    1, 2, 1,  
    2, 4, 2,  
    1, 2, 1  
};  
ip.convolve(H, 3, 3);    // a 3 x 3 filter kernel  
}  
}
```

The thesis template provides suitable code environments for various other languages.

## 3.2 The second assignment

And so on for all other assignments ...

## Summary and comments

Here you should summarize your learning experience, personal discoveries and major difficulties (if any). Also state the approximate amount of time you spent for this assignment and any optional accomplishments. This non-numbered section is produced with the `\section*{..}` command.

## References

- [1] Robert Sedgewick and Kevin Wayne. *Algorithms*. 4th ed. Reading, MA: Addison-Wesley, 2011.