FH University of Applied Sciences
TECHNIKUM WIEN

MASTER THESIS

Thesis submitted in fulfillment of the requirements for the degree of Master of Science in Engineering at the University of Applied Sciences Technikum Wien - Degree Program Embedded Systems

Title of your Thesis

This is a longer sub-title

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Wien, 2026-02-13

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Schlagwörter: Schlagwort1, Schlagwort2, Schlagwort3, ...

Abstract

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Keywords: Keyword1, Keyword2, Keyword3, ...

Acknowledgement

I want to thank ...

Table of Contents

1 About Typst

Typst is a newer typesetting alternative to LaTeX that is written using the programming language Rust and uses its own markup language resembling a mixture of (to some extend) both AsciiDoc and Markdown. To learn using Typst and its markup language start with the online tutorial.

1.1 Using Typst

You can either use the typst app or the open source offline compiler. The following commands are useful with the offline compiler.

```
> typst --version                          # output the version
> typst init @preview/uastw-thesis:0.1.1   # init a new project
> typst compile thesis.typ                 # compile the root file
> typst watch thesis.typ                   # compile & update code changes
> typst --help                             # output a help message
```

1.2 Writing in Typst

A simple yet fast way to get accustomed with the syntax of the Typst markup language print and checkout the Typst Cheat Sheet that summarizes the essentials on a single page.

1.2.1 Lists

To create an *unordered list* type ...

```
- unnumbered item
  - subitem 1
  - subitem 2
    - subsubitem
- second unnumbered item
```

... this yields:

- unnumbered item
  - subitem 1
  - subitem 2
    - subsubitem
- second unnumbered item

Advanced for one specific list ...

```
#block([#set list(marker: ([#text(emoji.finger.r)],
                    [#text(green, sym.arrow.r.dashed)],
                    [#text(rgb("#00689e"), sym.floral)]))
- one
  - two
    - three
])
```

👉 one
-⇢ two
❦ three

To create an *ordered list* type ...

```
+ unnumbered item
  + subitem 1
  + subitem 2
    + subsubitem
+ second unnumbered item
```

... this yields:

1. unnumbered item
   1. subitem 1
   2. subitem 2
      1. subsubitem
2. second unnumbered item

1.2.2 Headings

```
= Top Level Header


== Sub-Header


=== Subsub-Header
```

1 Top Header

1.1 Sub-Header

1.1.1 Subsub-Header

Advanced header styling: The following statement produces a heading without entry in the table-of-contents, without numbering but with an entry in the PDF bookmarks.

```
#heading(outlined: false, bookmarked: true, numbering: none)[Kurzfassung]
```

The next line shows how to reset the header numbering.

```
#counter(heading).update(0)
= Header
```

1.1.2 Text

The following example show-case different text styles ...

```
`mono`
*bold*
_italic_
#highlight[highlight]
#underline[underline]
#text(size: 1.5em)[Text Size]

#strike[Strikethrough text]
```

`mono`
bold
italic
highlight
underline
Text Size
~~Strikethrough text~~

Advanced text styling options ... the following code produces *demo*.

```
#text(rgb("01AB20"), font: "Alex Brush", 18pt)[demo]
```

1.1.3 Figures

Figure 1 show-cases how to include a figure , add a caption, and an anchor `<fig-uastw>` ...

```
#figure(
    image("images/logo.svg", width:
30%),
    caption: [UAS Technikum Wien Logo],
) <fig-uastw>
```

Figure 1: UAS Technikum Wien Logo

To reference the anchor use `@fig-uastw` (the name of the anchor prefixed with an `@`).

Typst supports various libraries where you can directly *program* vector graphics, e.g., the following "code" generates the figure to the right ...

```
#stack(dir: ltr, spacing: 1em,
  rect(width: 20pt, height: 20pt, fill: blue),
  circle(radius: 10pt, stroke: 2pt + red),
  line(start: (0pt, 0pt), end: (20pt, 20pt),
       stroke: green)
)
```

Specialized libraries are, e.g., Fletcher for flowcharts, tdtr for drawing tree diagrams, cetz for general purpose drawings (comparable to the LaTeX package TikZ), lilaq for scientific data visualization etc. .... checkout the package universe on the Typst homepage.

For example Figure 2 is rendered with the help of the fletcher library.

```
#import "@preview/fletcher:0.5.8" as fletcher: diagram, node, edge
#diagram(
    cell-size: 2cm, node-stroke: 1pt,
    node((0,0), [Input], fill: blue.lighten(80%)),
    edge((0,0), (1,0), "->"),
    node((1,0), [Process], fill: green.lighten(80%)),
    edge((1,0), (2,0), "->"),
    node((2,0), [Output], fill: red.lighten(80%)),
    edge((2,0), (2,1), "-|>-", `waste`),
    edge((1,0), (2,1), `dump`, "-|>-"),
    node((2,1), [Wastebin], fill: rgb("#8bb111")),
    edge((2,1), (0,0), "--|>--", `reset`)
)
```

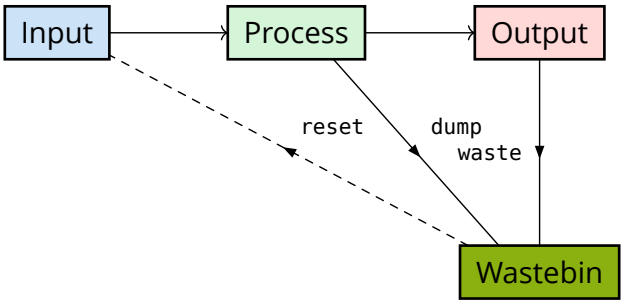

Figure 2: Example block diagram

1.1.4 Tables

Table 1 show-cases how to include a table …

```
#figure(
  table(
    columns: 2,
    table.header[*name*][*desc*],
    [a], [b],
    [c], [d],
  ),
  caption: [Demo Table],
)<tab-demo>
```

name	desc
a	b
c	d

Table 1: Demo Table

Checkout the Table Guide in the documentation for all sorts of table variants.

1.1.5 Quotes, References and other Clues

The quote from [1] states:

> "Against stupidity the very gods themselves contend in vain."
>
> — F. Schiller

Another famous quote from [2] is:

> "Die Botschaft hör ich wohl, allein mir fehlt der Glaube."
>
> — J.W. Goethe

Info

References simply use the anchor, e.g. `@goethe1999faust1` as used as key in the BibTeX file …

To set clue boxes like INFO, WARNING, TIP, etc. you may use the gentle clues package. The above info box was rendered using:

```
#import "@preview/gentle-clues:1.3.0": *

#info[References simply use the anchor, e.g. `@goethe1999faust1` as used as key in the BibTeX file ...]
```

1.1.6 Math

Mathematical equations are enclosed with `$` symbols as in LaTeX. Here is a simple example:

$$\sum_{k=0}^{n} k = 1 + ... + n$$
$$= \frac{n(n+1)}{2}$$

Below is how you type the formula:

```
$ sum_(k=0)^n k
    &= 1 + ... + n \
    &= (n(n+1)) / 2 $
```

1.1.7 Code

To render code listings the Typst universe features various packages - a prominent one is codly. The following example show-cases its use by referencing an external source-file `code/demo.c`.

```
#import "@preview/codly:1.2.0": *
#show: codly-init.with()

// Load and display an external C file
#raw(read("code/demo.c"), lang: "c", block: true)
```

The rendered output looks like ...

```c
/*
 ============================================================================
 Name        : io_scanf.c
 Author      : Max Muster
 Version     :
 Copyright   : (cc) by Max
 Description : Hello World in C, Ansi-style
 ============================================================================
 */

#include <stdio.h>
#include <stdlib.h>

int main(void) {
```

```
15    int num;
16    printf("Please give me a number: ");
17    int ret = scanf("%d", &num);
18    printf("You gave me %d\n", num);
19    printf("scanf returned %d\n", ret);
20    return EXIT_SUCCESS;
21 }
```

2 Another Section

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2.1 Sub-Section

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2.1.1 Subsub-Section

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2.1.1.1 Subsubsub-Section

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Bibliography

[1] F. Schiller, *The Maid of Orleans: A Romantic Tragedy*. Berlin: Unger, 1801. [Online]. Available: https://www.gutenberg.org/

[2] J. W. von Goethe, *Faust: Der Tragödie erster Teil*. Stuttgart: Reclam, 1999.

Index

An index is created by adding index keys to the text at the respective pages, e.g. using `#index[key]` where `key` is the word that will show up in the index along with the pages where it was referenced. To include the index you add code similar to the following one.

> ⚠ **Warning**
>
> You'll need to import the respective package in every file that makes use of it ...

```
#heading(outlined: false, bookmarked: true, numbering: none)[Index]
#import "@preview/in-dexter:0.7.2": *
#columns(3)[
  #make-index(title: none)
]
```