

Specialeskrivning i L^AT_EX (for DS)

Simon Skjernaas Erfurth

22. Februar, 2022

Dagens Plan

- 1 Organisering af filer
- 2 Front matter!
- 3 Referencer
- 4 Citationer og BibTeX
- 5 Indsætning af kode
- 6 Tips til sideopsætning

Organisering af filer

Filstruktur

```
├── bibliography.bib
├── img
│   ├── adversaries.pdf
│   ├── performance.pdf
│   └── qbit.pdf
├── SDUinline.pdf
├── SDUlogo.pdf
├── tex
│   ├── abstract.tex
│   ├── conclusion.tex
│   ├── introduction.tex
│   ├── preliminaries.tex
│   ├── quantum-crypto.tex
│   └── quantum-intro.tex
├── thesis.pdf
└── thesis.tex
```

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```

Inklusion

- `\input{./tex/abstract.tex}`
- OBS: placeringer er relativt til 'hoved'-filen!

Front matter!

Default forside

```
\title{Title}  
\author{Simon S. Erfurth\\University of Southern Denmark }  
\date{\today}  
\maketitle
```

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Men er den ikke lidt kedlig?

Front matter!

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```

Men er den ikke lidt kedlig?

Lav din egen!

```
\usepackage[nodayofweek]{datetime}\newdate{due}{01}{06}{2021}  
\begin{minipage}[c]{.8\textwidth}  
  \noindent{\Large Master's thesis in Mathematics}\\[.5cm]  
  {\Huge Oblivious Transfer in\\[.3cm]Quantum Cryptography}\\[.5  
    cm]  
  {\Large Simon S. Erfurth}\\[.2cm]  
  {\large Advisor: Joan Boyar}\\[1cm]  
  {\Large \displaydate{due}}  
\end{minipage}  
\vspace*{\fill}  
\includegraphics[width=.9\textwidth]{IMADA_en_black.eps}
```



Resume og Abstract

- \LaTeX taler engelsk
- Babel kan lære den Dansk: `\usepackage[danish]{babel}`
(Orddeling, Datoer, TOC, ...)

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Resume og Abstract

- \LaTeX taler engelsk
- Babel kan lære den Dansk: `\usepackage[danish]{babel}`
(Orddeling, Datoer, TOC, ...)
- Men rapporten og resume skal være på forskellige sprog!

Sprog

- `\selectlanguage{danish}` og `\selectlanguage{english}`
- Abstract miljø bliver også til „Resume“!

Resume og Abstract

```
\usepackage[danish,english]{babel}

...

\vspace*{\fill}

\selectlanguage{danish}
\begin{abstract}
  Kvantecomputere bliver stadig mere anvendelige i praksis...
\end{abstract}

\vspace*{\fill}

\selectlanguage{english}
\begin{abstract}
  With quantum computing becoming ever more usable in...
\end{abstract}

\vspace*{\fill}
```

Label's, ref's, og pageref's

- Brug `\label{type:ID}` lige fra starten!
- Referer `see Figure \ref{img:ID} on page \pageref{img:ID}`

Label's, ref's, og pageref's

- Brug `\label{type:ID}` lige fra starten!
- Referer `see Figure \ref{img:ID} on page \pageref{img:ID}`

`\label{}` kan give meget forskelligt!

- Section nummer
- Figure nummer
- Lignings nummer
- Sætnings nummer
- ...

Bib_{La}T_EX

```
\usepackage[backend=biber,sorting=anyt,style=alphanumeric]{  
  biblatex}  
\addbibresource{Bibliography.bib}  
...  
\printbibliography[heading=bibintoc]
```

- Forskellige stiler (spørg google!)
- Forskellige sorteringer (Author-Name-Year-Title)

Kildehenvisninger

Bib_{La}T_EX

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Bibliography.bib

- Skal følge et standardformat

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Men mange hjemmesider kan genere i dette formate!
F.eks. google scholar, dblp, arXiv, ...

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Bibliography.bib

- Skal følge et standardformat
Men mange hjemmesider kan genere i dette formate!
F.eks. google scholar, dblp, arXiv, ...
- Eller brug et program til at håndtere det
F.eks. JabRef, Zotero, eller Mendeley

Kildehenvisninger

```
@article{einstein,  
  author =      "Albert Einstein",  
  title =      "{Zur Elektrodynamik bewegter K{\\"o}rper}. [On  
    the electrodynamics of moving bodies]",  
  journal =    "Annalen der Physik",  
  volume =    "322",  
  number =    "10",  
  pages =     "891--921",  
  year =      "1905",  
  DOI =       "http://dx.doi.org/10.1002/andp.19053221004",  
  keywords =   "physics"  
}  
@book{dirac,  
  title={The Principles of Quantum Mechanics},  
  author={Paul Adrien Maurice Dirac},  
  isbn={9780198520115},  
  series={International series of monographs on physics},  
  year={1981},  
  publisher={Clarendon Press},  
  keywords = {physics}  
}
```

listings eller minted

- listings kræver lidt mere setup i \LaTeX
- minted kræver lidt mere setup rundt om \LaTeX

```
\usepackage{listings,xcolor}
\lstset{breaklines=true,
  basicstyle=\tt\scriptsize,
  keywordstyle=\color{blue},
  identifierstyle=\color{magenta},
},
inputencoding=utf8}
```

- `\usepackage{minted}`
- Installer Pygments pip
install Pygments
- Compile \LaTeX med
`--shell-escape`

Indsætning af kode

```
\begin{lstlisting}[language=
  Python]
class Node:
    def getMaxSize(self, p):
        level = 1
        while random.random() < p:
            level += 1
        return level

    def __init__(self, val, p):
        self.key = val # Int =NaN
        self.pointers = [] # array[
            Node]
        self.maxSize = self.
            getMaxSize(p) # Int
\end{lstlisting}
```

```
\begin{minted}[fontsize=\
  scriptsize,breaklines]{
  python}
class Node:
    def getMaxSize(self, p):
        level = 1
        while random.random() < p:
            level += 1
        return level

    def __init__(self, val, p):
        self.key = val # Int =NaN
        self.pointers = [] # array[
            Node]
        self.maxSize = self.getMaxSize
            (p) # Int
\end{minted}
```

Indsætning af kode

```
class Node:
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        while random.random() < p:
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        return level

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            getMaxSize(p) # Int
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        self.pointers = [] # array[Node]
        self.maxSize = self.getMaxSize(p)
        ↪ # Int
```

Indsætning af kode

Kode fra en fil

- `\lstinputlisting[language=Python]{SkipList.py}`
- `\inputminted{python}{SkipList.py}`

Indsætning af kode

Kode fra en fil

- `\lstinputlisting[language=Python]{SkipList.py}`
- `\inputminted{python}{SkipList.py}`

Inkluder kun nogen linjer

- `\lstinputlisting[language=Python, firstline=4, lastline=10]{SkipList.py}`
- `\inputminted[firstline=4, lastline=10]{python}{SkipList.py}`

Indsætning af kode (listings)

```
import matplotlib
import matplotlib.pyplot as plt
matplotlib.use("pgf")
matplotlib.rcParams.update({
    "pgf.texsystem": "pdflatex",
    'font.family': 'serif',
    'text.usetex': True,
    'pgf.rcfonts': False,
})
import random
import skipList

def testUniform(noElements):
    elements = [i for i in range(0, noElements)]
    random.shuffle(elements)
    bonusElement = elements.pop()
    list = skipList.SkipList(0.5)
    for i in elements:
        list.insert(i)
    list.comparisonCount = 0
    list.insert(bonusElement)
    return list.comparisonCount
```

MAX_EXP = 20

Indsætning af kode (minted)

```
import matplotlib
import matplotlib.pyplot as plt
matplotlib.use("pgf")
matplotlib.rcParams.update({
    "pgf.texsystem": "pdflatex",
    'font.family': 'serif',
    'text.usetex': True,
    'pgf.rcfonts': False,
})
import random
import skipList

def testUniform(noElements):
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    random.shuffle(elements)
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    for i in elements:
        list.insert(i)
    list.comparisonCount = 0
    list.insert(bonusElement)
    return list.comparisonCount
```

MAX_EXP = 20

Klasse

- Artcile er standarden (og nok!)
- `\documentclass[a4paper,twoside]{article}`

Sideopsætning

Klasse

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- `\documentclass[a4paper,twoside]{article}`

Typografi

```
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
\usepackage[tracking=true,kerning=true,spacing=true]{microtype}
```

Sideopsætning

Klasse

- Article er standarden (og nok!)
- `\documentclass[a4paper,twoside]{article}`

Typografi

```
\usepackage[utf8]{inputenc}
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\usepackage[tracking=true,kerning=true,spacing=true]{microtype}
```

Margin (og mere)

```
\usepackage{geometry}
\geometry{a4paper, margin=1in}
```

Sideopsætning

Side-hoved og -fod

- `\usepackage{fancyhdr}`

- 1 sided

```
\lhead{Oblivious Transfer in\\Quantum Cryptography}  
\chead{}  
\rhead{\displaydate{due}\\Simon Erfurth}  
\lfoot{SDU}  
\cfoot{}  
\rfoot{Page \thepage{} of \pageref{LastPage}}
```

Sideopsætning

Side-hoved og -fod

- `\usepackage{fancyhdr}`

- 1 sidet

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```

- 2 sidet

```
\fancyhead[RO]{Oblivious Transfer in\\Quantum Cryptography}  
\fancyhead[CO,CE,RE,LO]{}  
\fancyhead[LE]{Simon Erfurth\\IMADA, SDU}  
\fancyfoot[RO,LE]{Page \thepage{} of \pageref{LastPage}}  
\fancyfoot[CO,CE]{}  
\fancyfoot[RE,LO]{}  

```

Sideopsætning

Links

```
\usepackage[unicode=true,hidelinks]{hyperref}
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Afstande

Mindre afstand over- og under ligning.

```
\usepackage{setspace}  
\usepackage{etoolbox}  
\newcommand{\zerodisplayskips}{%  
  \setlength{\abovedisplayskip}{7pt}%  
  \setlength{\belowdisplayskip}{7pt}%  
  \setlength{\abovedisplayshortskip}{7pt}%  
  \setlength{\belowdisplayshortskip}{7pt}}  
\appto{\normalsize}{\zerodisplayskips}  
\appto{\small}{\zerodisplayskips}  
\appto{\footnotesize}{\zerodisplayskips}
```


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```

Floats før \section{}

```
\usepackage[section]{placeins}
```

