



LATEX tutorial

Fanny Ducel

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Main sources of information

Strong inspiration from Amandine Decker's classes (2022-2023), with her consent.

<https://fr.overleaf.com/learn>

Just the basics in this session, but feel free to explore!

Before we start

- ▶ Who has heard about \LaTeX ?
- ▶ Who already knows how to create documents with \LaTeX ?

This session (3h): theory, small break, then practice

What is L^AT_EX?

Document structure

Essential commands – to fill in your documents

Bibliography and citations

Some useful packages

Hands-on: fill in this document to make it look like the PDF!

- ▶ Pronounced LAY-tek or LAH-tek
- ▶ A markup **language** (like HTML or Markdown)
- ▶ And a typesetting **system**
- ▶ With a set of ready-made commands
- ▶ With a separation between form and content (two parallel "tabs")

Why use L^AT_EX?

To **easily** create documents that are:

- ▶ pretty
- ▶ clean
- ▶ with a very practical **bibliography** management system!
- ▶ and many, already made, available templates (for articles, theses, slides, . . .) in .zip

You will deal with: .tex, .bib that are compiled into a **PDF**.

Note: you will need to make your Supervised project report and your M2 thesis in Latex.

Where/how to use L^AT_EX?

- ▶ On Overleaf (online, collaborative, compiles for you)
- ▶ On <https://plmlatex.math.cnrs.fr/> ("copy" of Overleaf but fully free, by the CNRS, for universities/research)
- ▶ Locally (with VSCode, TeXStudio, ...)

What is \LaTeX ?

Document structure

Essential commands – to fill in your documents

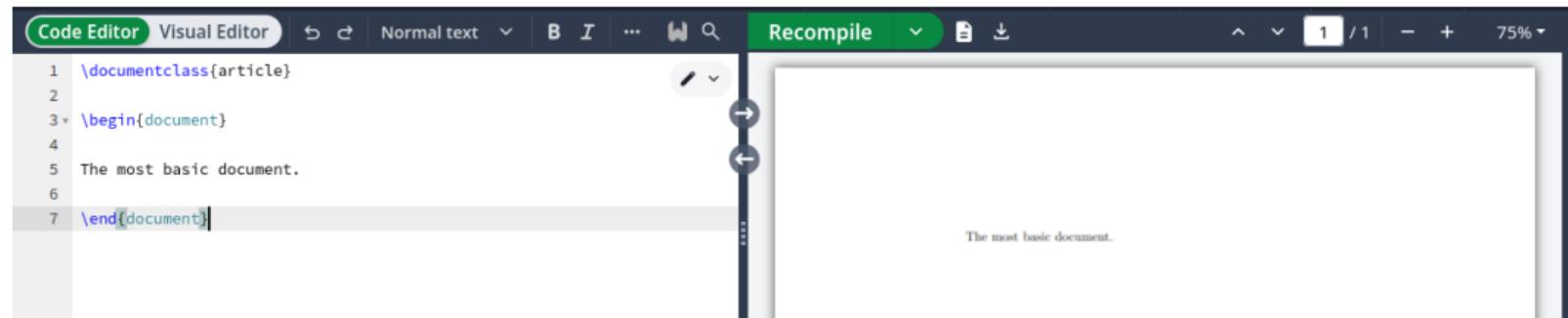
Bibliography and citations

Some useful packages

Hands-on: fill in this document to make it look like the PDF!

Let's make a document from scratch, main.tex

You can either start from scratch (blank document), or from a .zip template.



The screenshot shows a LaTeX editor interface. On the left, the 'Code Editor' pane displays the following LaTeX code:

```
1 \documentclass{article}
2
3 \begin{document}
4
5 The most basic document.
6
7 \end{document}
```

The 'Recompile' button is highlighted in green at the top of the editor. To the right of the code editor is a vertical toolbar with a pen icon and two circular arrows. Below the toolbar is a preview pane showing the rendered text: "The most basic document.".

Let's make a document from scratch, main.tex

The screenshot shows a LaTeX editor interface. On the left, the 'Code Editor' tab is active, displaying the following LaTeX code:

```
1 \documentclass[12pt, letterpaper]{article}
2
3 \usepackage[utf8]{inputenc}
4
5 \begin{document}
6     A basic document, but with some parameters and one package
    included.
7
8 \end{document}
```

On the right, the 'Visual Editor' tab is active, showing the rendered output of the LaTeX code: "A basic document, but with some parameters and one package included." There are two small circular arrows between the two editors, likely for switching between them.

Let's make a document from scratch, main.tex

The screenshot shows a LaTeX editor interface with two panes. The left pane, titled 'Code Editor', displays the LaTeX code for 'main.tex'. The right pane, titled 'Recompile', shows the resulting PDF document.

Code Editor (main.tex):

```
1 \documentclass[12pt, letterpaper]{article}
2
3 \title{{\LaTeX} tutorial}
4 \date{\today}
5 \author{Fanny Ducel}
6
7 \begin{document}
8
9 \maketitle
10 A simple example of document, with a parameter, a title, date, an
11 author and some text inside.
12
13 \end{document}
```

Recompile (Output):

PDF Output:

A simple example of document, with a parameter, a title, date, an author and some text inside.

\LaTeX{} tutorial

Fanny Ducel

October 21, 2025

Let's make a document from scratch, main.tex

The screenshot shows a LaTeX editor interface with a code editor on the left and a preview window on the right.

Code Editor:

```
1 \documentclass[10pt]{beamer}
2
3 % preamble
4 \usepackage{metropolis}
5
6 \title{\LaTeX{} tutorial}
7 \date{\today}
8 \author{Fanny Ducel}
9
10 \begin{document}
11
12 \maketitle
13
14 \begin{frame}{Introduction}
15   An example of slides with the popular beamer/metropolis template!
16 \end{frame}
17
18
19 \end{document}
```

Recompile: A button at the top center of the editor interface.

Preview Window:

The preview shows the generated Beamer presentation slide. The title is "LaTeX tutorial". Below it is a horizontal line. Underneath the line, the author is listed as "Fanny Duce~~l~~" and the date is "October 21, 2025".

The main content of the slide is a frame titled "Introduction". Inside the frame, the text "An example of slides with the popular beamer/metropolis template!" is displayed.

Preamble

In previous examples, we added more and more elements before the `\begin{document}`. It is called the **preamble**. It contains:

- ▶ the `\documentclass[]{}`: *article*, *book*, *report*, *beamer*, ... (+ optional parameters, for example about font, in [])
- ▶ the imported packages: with `\usepackage{}`
- ▶ the title of the document
- ▶ its authors (and their institutions)
- ▶ the date

What is \LaTeX ?

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Hands-on: fill in this document to make it look like the PDF!

Document structure

The screenshot shows a LaTeX editor interface with a code editor on the left and a preview area on the right. The code editor displays the following LaTeX code:

```
1 \documentclass[12pt, letterpaper]{article}
2
3 \title{\LaTeX{} tutorial}
4 \date{\today}
5 \author{Fanny Ducl{e}}
6
7 \begin{document}
8
9     \maketitle
10
11 \section{A section title}
12 \subsection{A subsection}
13 \subsubsection{A subsubsection}
14 \paragraph{A paragraph} Some very interesting text \dots
15
16 \end{document}
```

The preview area on the right shows the generated PDF output:

L^AT_EX tutorial
Fanny Ducl{e}
October 21, 2025

1 A section title
1.1 A subsection
1.1.1 A subsubsection
A paragraph Some very interesting text ...

Document structure and automatic table of contents

The screenshot shows a LaTeX editor interface with a code editor on the left and a preview area on the right.

Code Editor:

```
1 \documentclass[12pt, letterpaper]{article}
2
3 \title{{\LaTeX} tutorial}
4 \date{\today}
5 \author{Fanny Ducel}
6
7 \begin{document}
8
9 \maketitle
10
11 \tableofcontents
12
13 \section{A section title}
14 \subsection{A subsection}
15 \subsubsection{A subsubsection}
16 \paragraph{A paragraph} Some very interesting text \dots
17
18 \end{document}
```

Recompile: A green button with a downward arrow icon.

Preview Area:

- \LaTeX tutorial
- Fanny Ducel
- October 21, 2025

Contents:

1	A section title	1
1.1	A subsection	1
1.1.1	A subsubsection	1

1 A section title

1.1 A subsection

1.1.1 A subsubsection

A paragraph Some very interesting text ...

Text formatting

\textbf{Bold text} → **Bold text**

\textit{Italics} → *Italics*

\textsc{Small caps} → SMALL CAPS

\underline{Underlined} → Underlined

\texttt{Teletype/typewriter font} → Teletype/typewriter font

\textcolor{red}{Some colored text} → **Some colored text**

Text size – https://www.overleaf.com/learn/latex/Font_sizes%2C_families%2C_and_styles

\tiny

Lorem ipsum

\scriptsize

Lorem ipsum

\footnotesize

Lorem ipsum

\small

Lorem ipsum

\normalsize

Lorem ipsum

\large

Lorem ipsum

\Large

Lorem ipsum

\LARGE

Lorem ipsum

\huge

Lorem ipsum

\Huge

Lorem ipsum

Images – figure environment

```
1 \documentclass[12pt, letterpaper]{article}
2 \usepackage{graphicx}
3
4 \title{{\LaTeX} tutorial}
5 \date{\today}
6 \author{Fanny Ducel}
7
8 \begin{document}
9
10 \maketitle
11
12 \begin{figure}[h]
13   \centering
14   \includegraphics[width=0.5\linewidth]{img/
15     univ_lorraine.png}
16   \caption{Université de Lorraine (logo)}
17   \label{fig:logo_ul}
18 \end{figure}
19 The university's logo is presented in
20 Figure~\ref{fig:logo_ul}.
21
22 \end{document}
```



LATEX tutorial

Fanny Ducel

October 23, 2025



Figure 1: Université de Lorraine (logo)

The university's logo is presented in Figure 1.

Images – figure environment (step by step)

1. import the `graphicx` package: `\usepackage{graphicx}`

Images – figure environment (step by step)

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2. `\begin{figure}[h]` with the desired figure's location in []

Images – figure environment (step by step)

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 - ▶ **h**: here (approximately...), **t**: top, **b**: bottom, **!**: overrides internal parameters

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 - ▶ **h**: here (approximately...), **t**: top, **b**: bottom, **!**: overrides internal parameters
3. you can add `\centering`

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3. you can add `\centering`
4. `\includegraphics[]{} with size between [] and path to file between { }` (png, pdf, jpeg, eps)

Images – figure environment (step by step)

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4. `\includegraphics[]{} with size between [] and path to file between {} (png, pdf, jpeg, eps)`
 - ▶ size (width and/or height): absolute value (in *pt/mm/cm/in/...*), or proportional (*linewidth, textwidth, textheight, paperwidth, paperheight, ...*)

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5. a caption `\caption{Description...}`

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6. a label, to be able to refer to the figure in the text `\label{fig:logo}`

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 - ▶ then, you can refer to the figure with `\ref{fig:logo}` (= automatic numbering and link to figure)

Images – figure environment (step by step)

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 - ▶ then, you can refer to the figure with `\ref{fig:logo}` (= automatic numbering and link to figure)
 - ▶ Note: `\label{}` and `\ref{}` can also be used for tables, sections, chapters, ...

Images – figure environment (step by step)

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 - ▶ then, you can refer to the figure with `\ref{fig:logo}` (= automatic numbering and link to figure)
 - ▶ Note: `\label{}` and `\ref{}` can also be used for tables, sections, chapters, ...
7. `\end{figure}`

Tables – tabular

```
-- 12 \begin{table}[h]
-- 13     \centering
-- 14     \begin{tabular}{|c|c|} 
-- 15     \hline
-- 16     \textbf{Col 1} & \textbf{Col 2} \\
-- 17     \hline
-- 18     Cell 1 & Cell 2 \\
-- 19     \hline
-- 20     \end{tabular}
-- 21     \caption{A simple table.}
-- 22     \label{tab:example}
-- 23 \end{table}
```



Col 1	Col 2
Cell 1	Cell 2

Table 1: A simple table.

Tables – tabular (step by step)

1. `\begin{table}[h]` environment, with location in [] (// figures)

Tables – tabular (step by step)

1. `\begin{table}[h]` environment, with location in [] (// figures)
2. `\begin{tabular}{|c|c|}` where:

Tables – tabular (step by step)

1. `\begin{table}[h]` environment, with location in [] (// figures)
2. `\begin{tabular}{|c|c|}` where:
 - ▶ each "|" symbol represents a vertical line

Tables – tabular (step by step)

1. `\begin{table}[h]` environment, with location in [] (// figures)
2. `\begin{tabular}{|c|c|}` where:
 - ▶ each "|" symbol represents a vertical line
 - ▶ each letter represents a column and its alignment: `c` (center), `r` (right), or `l` (left)

Tables – tabular (step by step)

1. `\begin{table}[h]` environment, with location in [] (// figures)
2. `\begin{tabular}{|c|c|}` where:
 - ▶ each "|" symbol represents a vertical line
 - ▶ each letter represents a column and its alignment: c (center), r (right), or l (left)
3. `\hline` is used to add a horizontal line

Tables – tabular (step by step)

1. `\begin{table}[h]` environment, with location in [] (// figures)
2. `\begin{tabular}{|c|c|}` where:
 - ▶ each "|" symbol represents a vertical line
 - ▶ each letter represents a column and its alignment: c (center), r (right), or l (left)
3. `\hline` is used to add a horizontal line
4. We fill the table line by line, separating values with a &, and indicating the end of the line with \\

Tables – tabular (step by step)

1. `\begin{table}[h]` environment, with location in [] (// figures)
2. `\begin{tabular}{|c|c|}` where:
 - ▶ each "|" symbol represents a vertical line
 - ▶ each letter represents a column and its alignment: c (center), r (right), or l (left)
3. `\hline` is used to add a horizontal line
4. We fill the table line by line, separating values with a &, and indicating the end of the line with `\\"`
5. Then we `\end{tabular}`

Tables – tabular (step by step)

1. `\begin{table}[h]` environment, with location in [] (// figures)
2. `\begin{tabular}{|c|c|}` where:
 - ▶ each "|" symbol represents a vertical line
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3. `\hline` is used to add a horizontal line
4. We fill the table line by line, separating values with a &, and indicating the end of the line with `\\"`
5. Then we `\end{tabular}`
6. We can add a caption and a label (// figures)

Tables – tabular (step by step)

1. `\begin{table}[h]` environment, with location in [] (// figures)
2. `\begin{tabular}{|c|c|}` where:
 - ▶ each "|" symbol represents a vertical line
 - ▶ each letter represents a column and its alignment: c (center), r (right), or l (left)
3. `\hline` is used to add a horizontal line
4. We fill the table line by line, separating values with a &, and indicating the end of the line with `\\"`
5. Then we `\end{tabular}`
6. We can add a caption and a label (// figures)
7. We close the table: `\end{table}`

Lists – enumerate and itemize

```
11 \section*{Ordered lists}
12 \begin{enumerate}
13     \item First item
14     \item Second item
15 \begin{enumerate}
16     \item First subitem
17     \item Second subitem
18 \end{enumerate}
19     \item Third item
20 \end{enumerate}
21
22 \section*{Unordered lists}
23 \begin{itemize}
24     \item Item
25     \item Item
26     \item Item
27 \end{itemize}
```



Ordered lists

1. First item
2. Second item
 - (a) First subitem
 - (b) Second subitem
3. Third item

Unordered lists

- Item
- Item
- Item

Equations and formulas

Inline: $\$a^2 + b^2 = c^2\$ \rightarrow a^2 + b^2 = c$

Display: $\begin{equation} a^2 + b^2 = c^2 \end{equation}$

$$a^2 + b^2 = c \tag{1}$$

Table of contents, glossaries, index, footnotes ...

Earlier, we saw: `\tableofcontents`

You can also have `\listoftables`, `\listoffigures`

You can also make glossaries, index, ... with the corresponding packages (see
<https://www.overleaf.com/learn/latex/Glossaries>,
<https://www.overleaf.com/learn/latex/Indices>)

And use `\footnote{This is a footnote.}`¹

¹This is a footnote.

Misc: comments, hyperlinks, linebreaks, symbols

Comments: with %, everything that follows it on the line won't be displayed.

Hyperlinks: `\url{www.overleaf.com}` → www.overleaf.com or
`\href{www.overleaf.com}{Overleaf}` → Overleaf²

Linebreaks: Double line break ("Enter"), or \\ (no indent though)

Pagebreaks: `\newpage`, everything that follows will be on... a new page

Spaces: `\hfill`, `\vspace{1cm}`, `\hspace{1cm}`

Symbols (arrows, operators, greek letters, ...):

`$\alpha`, `\Rightarrow`, `\cap`, `\neq`, `\infty` → $\alpha, \Rightarrow, \cap, \neq, \infty$

²You will need the href package.

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Hands-on: fill in this document to make it look like the PDF!

Bibliography management – biblio.bib

You will need to create .bib files that contain bibtex entries like this:

→ Key (used for citations commands)

Type of document:

- *inproceedings*: articles in conferences with proceedings
- *article*: journal article
- *book*
- *online*
- *thesis*
- *misc*
- ...

```
@inproceedings{bannour-etal-2021-evaluating,  
    title = "Evaluating the carbon footprint of {NLP} methods: a survey and  
    analysis of existing tools",  
    author = "Bannour, Nesrine and  
        Ghannay, Sahar and  
        N\'e\'ev\'el, Aur\'elie and  
        Ligozat, Anne-Laure",  
    booktitle = "Proceedings of the Second Workshop on Simple and Efficient  
    Natural Language Processing",  
    month = nov,  
    year = "2021",  
    address = "Virtual",  
    publisher = "Association for Computational Linguistics",  
    url = "https://aclanthology.org/2021.sustainlp-1.2",  
    doi = "10.18653/v1/2021.sustainlp-1.2",  
    pages = "11--21"  
}
```

Bibliography management – how to find bibtex entries? ACL Anthology

The screenshot shows a web page from the ACL Anthology. At the top, there is a navigation bar with links for "ACL Anthology", "News", "FAQ", "Corrections", "Submissions", "Github", and a search bar. Below the navigation bar, the main content area displays a paper titled "The Elephant in the Room: Analyzing the Presence of Big Tech in Natural Language Processing". The author is Mohamed Abdalla. On the left side, there is an "Abstract" section which is partially visible. A modal dialog box is open, titled "Export citation", containing tabs for "BibTeX", "MODS XML", "Endnote", and "Preformatted". The "BibTeX" tab is selected, showing the following BibTeX code:

```
@inproceedings{abdalla-etal-2023-elephant,  
    title = "The Elephant in the Room: Analyzing the Presence of Big Tech in Natural Language Processing",  
    author = "Abdalla, Mohamed and Wahle, Jan Philip and Ruas, Terry and N\'e\'v\'el\'eol, Aur\'elie and Ducel, Fanny and Mohammad, Saif and Fort, Karen",  
    editor = "Rogers, Anna and Boyd-Graber, Jordan and Okazaki, Naoaki",  
    booktitle = "Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics",  
    month = jul,  
    year = "2023",  
    address = "Toronto, Canada",  
    publisher = "Association for Computational Linguistics",  
    url = "https://aclanthology.org/2023.acl-long.734/".
```

On the right side of the dialog, there are several buttons: "PDF" (dark blue), "Cite" (yellow, currently selected), "Search" (grey), "Video" (green), and "Fix data" (orange). At the bottom of the dialog, there are buttons for "Download as File" (with a download icon) and "Copy to Clipboard" (with a clipboard icon).

Anthology ID
Volume

Bibliography management – how to find bibtex entries? Google Scholar

Generically intended, but specifically interpreted: When beauticians, musicians, and mechanics are all men

[PDF] unifr.ch

P Gygax, U Gabriel, O Sarrasin, J Oakhill... - Language and ..., 2008 - Taylor & Francis

The influence of stereotype and grammatical information (masculine intended as generic)

on the representation of gender in language v

☆ Enregistrer 99 Citer Cité 437 fois Autre

The male bias of a generically-intended eye-tracking and sentence evalua

T Redl, SL Frank, P De Swart, H De Hoop - F

... a male bias when used generically in sen masculine pronoun to trigger ... suggest that

☆ Enregistrer 99 Citer Cité 24 fois Autre

Language policies and in-group favor of generically intended masculine

U Gabriel - Social Psychology, 2008 - econtent

This study investigates the influence of sex of generic on the naming of female personalities

☆ Enregistrer 99 Citer Cité 28 fois Autre

X Citer

APA Gygax, P., Gabriel, U., Sarrasin, O., Oakhill, J., & Garnham, A. (2008). Generically intended, but specifically interpreted: When beauticians, musicians, and mechanics are all men. *Language and cognitive processes*, 23(3), 464-485.

ISO 690 GYGAX, Pascal, GABRIEL, Ute, SARRASIN, Oriane, et al. Generically intended, but specifically interpreted: When beauticians, musicians, and mechanics are all men. *Language and cognitive processes*, 2008, vol. 23, no 3, p. 464-485.

MLA Gygax, Pascal, et al. "Generically intended, but specifically interpreted: When beauticians, musicians, and mechanics are all men." *Language and cognitive processes* 23.3 (2008): 464-485.

BibTeX EndNote RefMan RefWorks

Bibliography management – bib commands

Commands depend on the used template/package:

`\usepackage{natbib}` in the preamble

`\bibliographystyle{apalike}` with the desired bibliography style³, at the end of the document

`\bibliography{biblio}` with the name of the bib file between { }, at the end of the document

OR: (in the Supervised Project template)

`\addbibresource{example.bib}` in the preamble (along with the package import)

`\printbibliography[heading=bibintoc]` at the end of the document

³See https://www.overleaf.com/learn/latex/Bibtex_bibliography_styles.

Bibliography management – output



References

Bannour, N., Ghannay, S., Névéol, A., and Ligozat, A.-L. (2021). Evaluating the carbon footprint of NLP methods: a survey and analysis of existing tools. In *Proceedings of the Second Workshop on Simple and Efficient Natural Language Processing*, pages 11–21, Virtual. Association for Computational Linguistics.

Bender, E. M., Gebru, T., McMillan-Major, A., and Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, FAccT '21, page 610–623, New York, NY, USA. Association for Computing Machinery.

Strubell, E., Ganesh, A., and McCallum, A. (2019). Energy and policy considerations for deep learning in NLP. In *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics*, pages 3645–3650, Florence, Italy. Association for Computational Linguistics.

Citations – knowing when to use which command

`\cite{bender-stochastic}` → Bender et al. (2021)

⇒ For textual citations, when the authors' name(s) are part of the text: "As mentioned in Bender et al. (2021), ..."

`\citet{bender-stochastic}` → Bender et al. (2021)

⇒ Same as `\cite{}`, can sometimes render slightly differently depending on the template/package.

`\citep{bender-stochastic}` → (Bender et al., 2021)

⇒ For parenthetical, more indirect citations: "The image of stochastic parrots (Bender et al., 2021) is used...", "Previous research efforts show that ethics is important (Bender et al., 2021)."

What is \LaTeX ?

Document structure

Essential commands – to fill in your documents

Bibliography and citations

Some useful packages

Hands-on: fill in this document to make it look like the PDF!

Some useful packages

- ▶ `graphicx`: seen earlier, for figures
- ▶ `xcolor`: to add colors to documents
- ▶ `babel`: to choose the language(s) of the document and automatically translate automatic titles (table of content, . . .), change date format, . . .
- ▶ `geometry`: for page layout control
- ▶ `subcaption`: for subfigures
- ▶ `multirow`: for advanced tables
- ▶ . . .

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Small break?

10 minutes

Copy the Overleaf project

We will work on the template that you should use for the Supervised project report (cf. Arche): <https://www.latextemplates.com/template/masters-doctoral-thesis>.

1. Create an account on Overleaf (or PLM Latex).
2. Download the .zip on my website
3. Create a new project, select "upload project" and select the .zip file that you just downloaded.
4. Start filling in the .tex files, so that it looks like result.pdf
5. Note: Don't write text yourself, paste directly from the .md file (but add the formatting)

*Note/tip: to keep a long document clean, we usually work on different .tex file (one per chapter for example), and put them together in the main.tex with
\include{chapter1}*

Collaborative correction?

Join the project: <https://tinyurl.com/ycxj4sjj>

The correction will also be made available on my website after the class.

Bender, E. M., Gebru, T., McMillan-Major, A., and Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? In Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency, FAccT '21, page 610–623, New York, NY, USA. Association for Computing Machinery.