

# Introduction to Overleaf

## Learning how to use Overleaf and L<sup>A</sup>T<sub>E</sub>X

Marcelo Garcia

KAUST Library

June 26, 2022

# Outline

Starting with Overleaf

Logging into Overleaf

New Article

The Preamble

Bold, Italic and Underline

Lists

Equations

Align Equation

Examples

Table

Bibliography

# Overleaf and $\text{\LaTeX}$

Overleaf in their own words: “Overleaf is a startup and social enterprise that builds modern collaborative authoring tools for scientists — like *Google Docs for Science*. Our primary product is an online, real time collaborative editor for papers, theses, technical reports and other documents written in the  *$\text{\LaTeX}$  markup language*.”

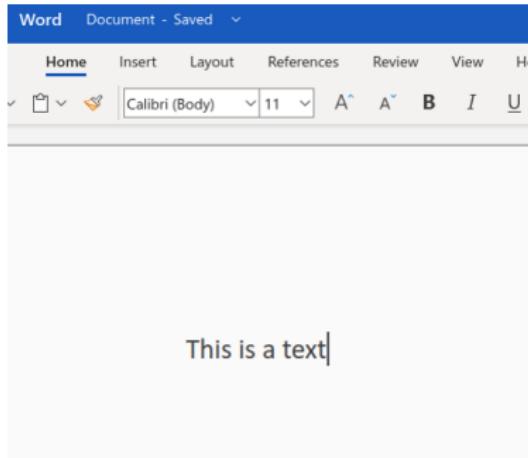
Sounds good, but what is  *$\text{\LaTeX}$  markup language*?

# Text Processor vs Text Editor

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

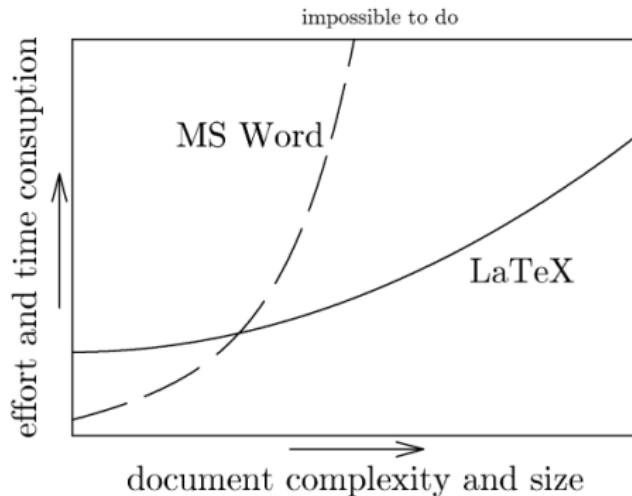
<h1>This is a Heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```



# $\text{\LaTeX}$ and MS-Word

Why to consider  $\text{\LaTeX}$  over Word?



# Origins of $\text{\LaTeX}$

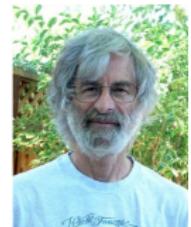
Donald E. Knuth created  $\tau\varepsilon\chi$  (Tau Epsilon Chi) between 1977 and 1979.

- ▶ Unhappy how his book looked after publisher changed from hot metal typesetting (19th century tech) to phototypesetting in 1960s.
- ▶ Greek word “Tekne” means “art, skill, craft in work,” and it’s the root for the word “technology.”

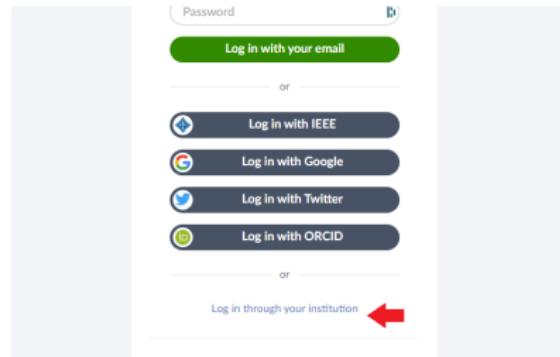
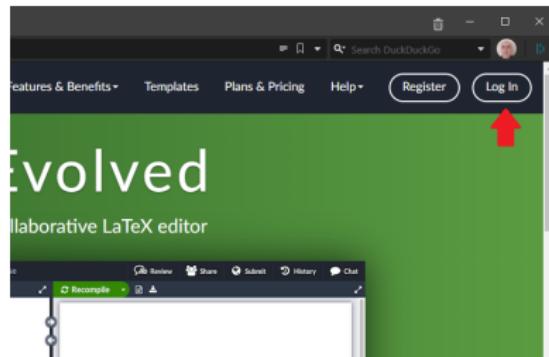


Leslie Lamport extended TeX

- ▶ While using TeX he noticed could expand with macros
- ▶ Released his LaTeX macros between 1984 and 1985. He handed the control of  $\text{\LaTeX}$  in 1989.



# Logging in Overleaf



You will need your KAUST credentials for the login.

# Projects Overview

“Home” page of the account. You will return to this page, if explore the online help from Overleaf, and decide to return to your projects. It’s a shortcut.

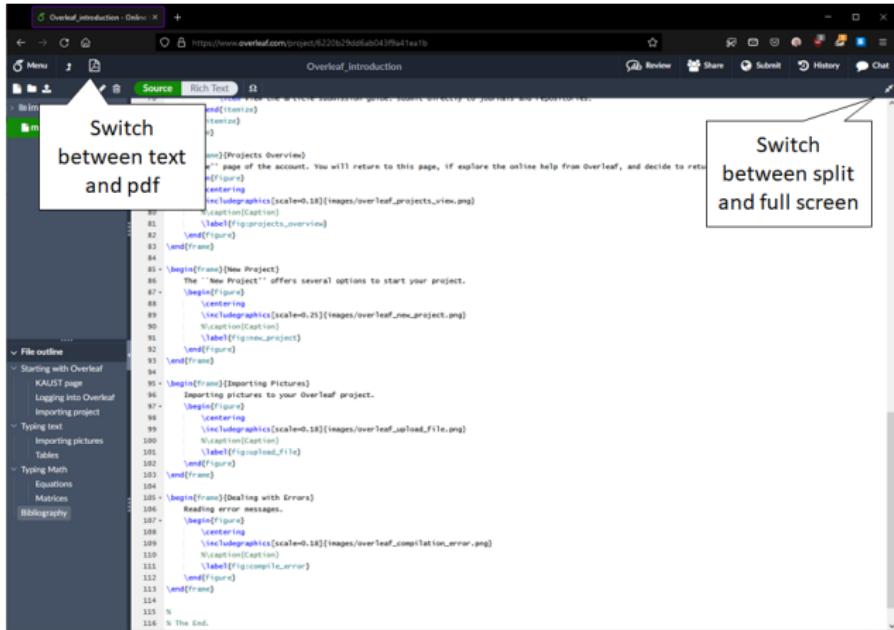
The screenshot shows the Overleaf web interface. At the top, there's a navigation bar with links for 'Features & Benefits', 'Templates', 'Plans & Pricing', 'Help', 'Projects' (which is highlighted in blue), and 'Account'. On the left, a sidebar menu includes 'New Project', 'All Projects', 'Your Projects' (with a red circular icon), 'Shared with you', 'Archived Projects', 'Trashed Projects', 'TAGS/FOLDERS', and 'New Folder'. The main content area is titled 'Search projects...' and lists several projects:

Title	Owner	Last Modified	Actions
Overleaf_Introduction	You	18 hours ago by You	
Hello_Overleaf	You	6 days ago by You	
King Abdullah University of Science and Technology - Overleaf Commons Onboarding: Simplified Repository Link Setup	Lori Lambeth %	a month ago by daryl.grenz	
Intro to Overleaf 1+2 (Copy)	%	a month ago	
Webinar Part 1 Beamer Presentation (Copy 1)	%	a month ago	
King Abdullah University of Science and Technology - Overleaf Commons Onboarding	Lori Lambeth %	3 months ago by You	

At the bottom of the page, there's a footer with links for 'Powered by Overleaf', 'English', 'Privacy and Terms', 'Security', 'Contact Us', 'About', and 'Blog'. The footer also includes the King Abdullah University of Science and Technology logo and a 'University Library' section.

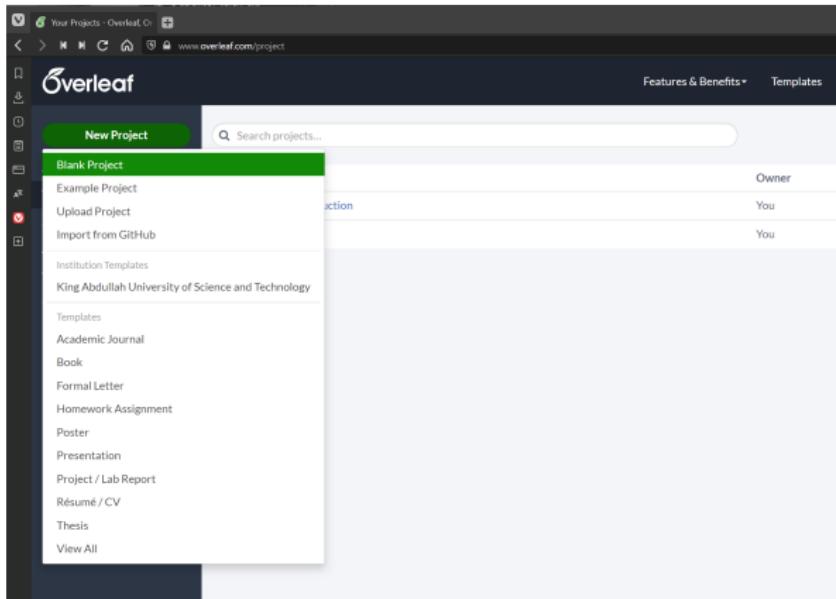
## Split or Full Screen

Switching between split and full screen.



# New Project

The “New Project” offers several options to start your project.



# Document Structure

## Structure of a $\text{\LaTeX}$ document.

```
\documentclass{...}
\usepackage{...}
...
```

preamble

```
\begin{document}
```

```
\title{...}
\author{...}
\date{...}
\maketitle
```

top matter

```
\begin{abstract}
...
\end{abstract}
```

abstract

```
\section{...}
```

```
\section{...}
```

```
\begin{thebibliography}{9}
...
\end{thebibliography}
```

bibliography

```
\end{document}
```

body

# The Preamble and Top Matter

The preamble and top matter of the document

- ▶ The `\documentclass[parameter]{class}` command marks the beginning of the document.
  - ▶ Parameter (optional): font and paper size, like `10pt` or `a4paper`
  - ▶ Class: the class of the document *book*, *report*, *article*, *letter*, etc.
- ▶ To combine more than one author use `\and`, like `\author{John \and Mary}`.
- ▶ You can control the date that is displayed by giving an explicit date, like `\date{1st January 1970}`, or `\date{\today}`, or `\date{}` for no date.

# Working with Text

- ▶ Several levels of sectioning: section, subsection, subsubsection, etc.
- ▶ Several font families

Specifier	Switches To
<code>\textnormal{}</code>	normal document text
<code>\emph{}</code>	<i>emphasis</i>
<code>\texttt{}</code>	Typewriter style font family
<code>\textit{}</code>	<i>italic text</i>
<code>\textbf{}</code>	<b>bold text</b>
<code>\textrm{}</code>	Roman font family
<code>\textsf{}</code>	Sans-serif font family

# Example of Lists

```
\begin{itemize}
    \item We have the bullet list
    \begin{itemize}
        \item A nested list
    \end{itemize}
\end{itemize}
\begin{enumerate}
    \item We have numbered list
    \begin{enumerate}
        \item Another nested list
    \end{enumerate}
\end{enumerate}
\begin{description}
    \item[itemize:] is an unordered list
    \item[enumerate:] is an ordered list
\end{description}
```

- ▶ We have the bullet list
  - ▶ A nested list

1. We have numbered list
  - 1.1 Another nested list

**itemize:** is an unordered list

**enumerate:** is an ordered list

## Importing Pictures

## Importing pictures to your Overleaf project.

# Working with Pictures

Adding caption and setting the size of pictures

- ▶ Import the package `graphicx` to enable pictures in the document.
- ▶ You can specify the size of the pictures by scaling the pictures, like 10% of the original size, or by explicitly setting dimension.
- ▶ Give “hints” of the picture placement, with `h` for `here` or `t` for `top`.
- ▶ Use the caption to explain the picture
- ▶ By labeling the picture, you can reference it later in the document.

# Example of Picture

```
\begin{figure}[ht]
\centering
\includegraphics[width=0.5\textwidth] <break>
{bombetoka_aster_23aug00_lrg}
\caption{An Otherworldly-Looking Bombetoka Bay,
Madagascar}
\label{fig:Bombetoka_Bay}
\end{figure}
```



**Figure:** An Otherworldly-Looking Bombetoka Bay, Madagascar

# Working with Equations

Here is where  $\text{\LaTeX}$  really shines! This is a huge topic, and we will cover only the basics.

- ▶ Load the packages `amssymb` and `latexsym`
- ▶ Inline math can type between the `$...$`, like `$\sqrt{5}$` will produce  $\sqrt{5}$ .
- ▶ Equations will be in the equation environment

```
\begin{equation}
    x = \sqrt{5}
\end{equation}
```

- ▶ Big and complex formulas require some planning

# Examples of Equations

```
\begin{equation}\label{E:firstInt}
\int_{0}^{\pi} \sin x \, dx = 2
\end{equation}
```

$$\int_0^\pi \sin x \, dx = 2 \quad (1)$$

```
\begin{aligned}
r^2 &= s^2 + t^2, & \text{\label{E:Pyth}} \\
2u + 1 &= v + w^{\alpha}, & \text{\label{E:alpha}} \\
x &= \frac{y + z}{\sqrt{s + 2u}}; & \text{\label{E:frac}}
\end{aligned}
```

$$r^2 = s^2 + t^2, \quad (2)$$

$$2u + 1 = v + w^{\alpha}, \quad (3)$$

$$x = \frac{y + z}{\sqrt{s + 2u}}; \quad (4)$$

```
\[
f(x) =
\begin{cases}
-x^2, & \text{if } x < 0; \\
\alpha + x, & \text{if } 0 \leq x \leq 1; \\
x - 2, & \text{otherwise.}
\end{cases}
\]
]
```

```
\[
\overbrace{a + b + \cdots + z}^n
\]
```

$$f(x) = \begin{cases} -x^2, & \text{if } x < 0; \\ \alpha + x, & \text{if } 0 \leq x \leq 1; \\ x - 2, & \text{otherwise.} \end{cases}$$

$$\overbrace{a + b + \cdots + z}^n$$

# Working with Tables

## Creating tables in L<sup>A</sup>T<sub>E</sub>X

- ▶ Start simple with the `tabular` environment
- ▶ Define the alignment of columns, left (`l`), center (`c`) or right (`r`).
- ▶ Then add borders with `\hline` for horizontal lines and for vertical lines, define together with the header, like  
`{| |c c c c ||}`
- ▶ Add the `table` environment
- ▶ Finally finish the table environment by defining the adding caption and label.

# Example Table

```
\begin{table}[h!]
\centering
\begin{tabular}{||c c c c||}
\hline
Col1 & Col2 & Col2 & Col3 \\
\hline\hline
1 & 6 & 87837 & 787 \\
2 & 7 & 78 & 5415 \\
3 & 545 & 778 & 7507 \\
4 & 545 & 18744 & 7560 \\
5 & 88 & 788 & 6344 \\
\hline
\end{tabular}
\caption{Table to test captions and labels}
\label{table:data}
\end{table}
```

Col1	Col2	Col2	Col3
1	6	87837	787
2	7	78	5415
3	545	778	7507
4	545	18744	7560
5	88	788	6344

**Table:** Table to test captions and labels

# Bibliography

- ▶ Add the package `biblatex`
- ▶ Specify the file with the bibliography entries
- ▶ You reference the citation with `\cite{...}`
- ▶ Several supported entries: books, articles, patents, proceedings, conference, etc
- ▶ Several styles of bibliography are supported: numeric, alphabetic authoryear, etc
- ▶ Specific bibliography style for some magazines like Nature, IEEE, Science, and others.
- ▶ Where do you want the bibliography list to appear, add the command `\printbibliography`.

# Comparing Versions

You can compare different versions of the document using the "History".

The screenshot shows a Microsoft Edge browser window displaying the Overleaf project 'Overleaf\_introduction'. The code editor on the left shows a LaTeX file with several changes highlighted in green and blue. A callout box points to the first change with the text: 'To return to the "normal" mode'.

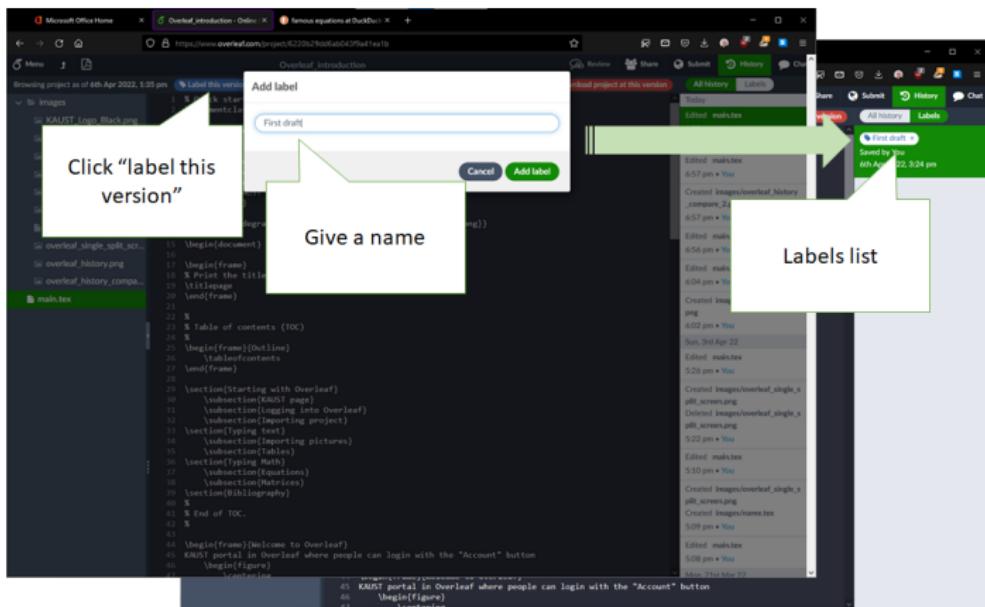
A large callout box on the right points to the 'History' tab in the top navigation bar, with the text: 'Drag the bar to mark the versions'.

The 'History' panel on the right lists the following activity:

- Today:
  - Edited main.tex 6:04 pm • You
  - Created Images/overleaf\_history.png 6:02 pm • You
  - Sat, 2nd Apr 22:
    - Edited main.tex 5:26 pm • You
    - Created Images/overleaf\_single\_s.pdf\_screen.png
    - Deleted Images/overleaf\_single\_s.pdf\_screen.png 5:22 pm • You
- ...
  - Edited main.tex 5:10 pm • You
  - Created Images/overleaf\_single\_s.pdf\_screen.png
  - Created Images/name.tex 5:09 pm • You
- Edited main.tex 5:08 pm • You
- Mon, 21st Mar 22:
  - Edited main.tex 4:22 pm • You
  - Edited main.tex 4:08 pm • You
- Edited main.tex 3:49 pm • You
- Edited main.tex 3:44 pm • You
- Mon, 14th Mar 22

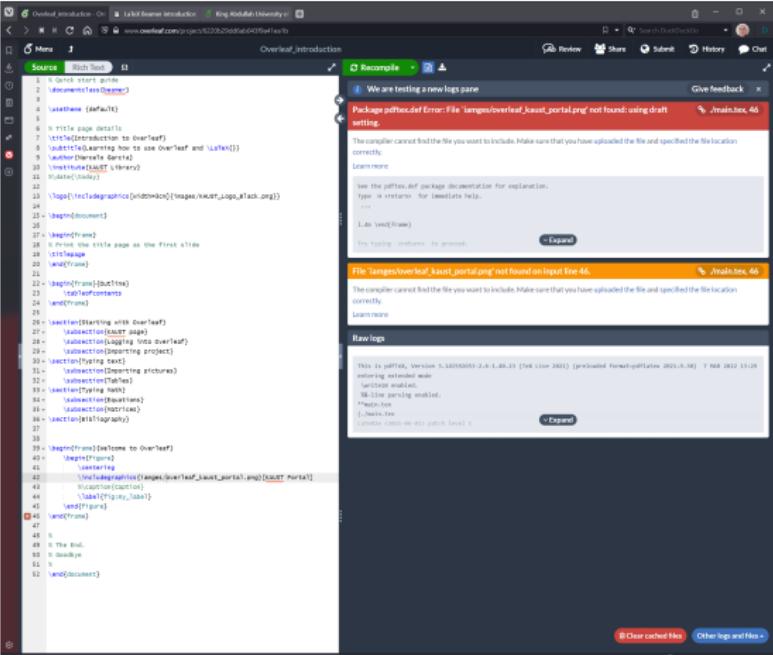
# Using Tags

Tag your versions to mark special versions.



# Dealing with Errors

## Reading error messages.



The screenshot shows a LaTeX document titled "Overleaf\_introduction" with the following code:

```
1 \documentclass{article}
2 \usepackage{fancyhdr}
3 
4 \begin{document}
5 
6 \title{My first page title}
7 \author{Introduction to Overleaf}
8 \date{\today}
9 
10 \maketitle
11 
12 \begin{abstract}
13 \end{abstract}
14 
15 \begin{tikzpicture}[remember picture, overlay]
16   \node[inner sep=0pt] at (current page.north) {\includegraphics[width=\paperwidth]{images/logo_overleaf.png}};
17 \end{tikzpicture}
18 
19 \begin{frame}
20   \title{My first page as the first slide}
21   \maketitle
22 \end{frame}
23 
24 \begin{frame}[allowframebreaks]
25   \begin{tikzpicture}[remember picture, overlay]
26     \node[inner sep=0pt] at (current page.north) {\includegraphics[width=\paperwidth]{images/logo_overleaf.png}};
27   \end{tikzpicture}
28 
29 \end{frame}
30 
31 \begin{frame}
32   \begin{tikzpicture}[remember picture, overlay]
33     \node[inner sep=0pt] at (current page.north) {\includegraphics[width=\paperwidth]{images/logo_overleaf.png}};
34   \end{tikzpicture}
35 
36 \end{frame}
37 
38 \begin{frame}[allowframebreaks]
39   \begin{tikzpicture}[remember picture, overlay]
40     \node[inner sep=0pt] at (current page.north) {\includegraphics[width=\paperwidth]{images/logo_overleaf.png}};
41   \end{tikzpicture}
42 
43 \end{frame>
44 
45 \begin{frame}[allowframebreaks]
46   \begin{tikzpicture}[remember picture, overlay]
47     \node[inner sep=0pt] at (current page.north) {\includegraphics[width=\paperwidth]{images/logo_overleaf.png}};
48   \end{tikzpicture>
49 
50 \end{frame>
51 
52 \end{document}
```

The Overleaf interface displays two error messages in the log panel:

- Package pdfTeX Error: File `images/overleaf\_koest\_portal.png' not found; using draft setting.**

This message indicates that the file `images/overleaf\_koest\_portal.png` was not found, so the draft setting is being used. It also suggests checking the file location and name.
- File `images/overleaf\_koest\_portal.png' not found on input line 46.**

This message is similar to the first one, indicating that the file was not found on input line 46. It also suggests checking the file location and name.

At the bottom of the log panel, there are buttons for "Clear cached files" and "Other logs and files".