

LATEX

Practical Workshop on

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About Myself



UG
Computer Science
2012-2016



PhD
IDIC Digital Technologies
2016-2020

Outline

- Brief overview
- [15-20 min] Easy LaTeX formatting with useful tools
- [30-35 min] Live demo (with the Nottingham template)
- [20-25 min] Hands-on practice and Q&A

About LaTeX

- LaTeX is a high-quality **typesetting** system.
- It includes features designed for the production of **technical and scientific documentation**.
- LaTeX is the de facto **standard** for the communication and publication of scientific documents.
- LaTeX is available as **free** software.

About LaTeX



Thesis Title

Thesis submitted to the University of Nottingham for the degree of
Doctor of Philosophy, July 2020.

Your Name

Your ID

Supervised by

First Supervisor
Second Supervisor
Third Supervisor

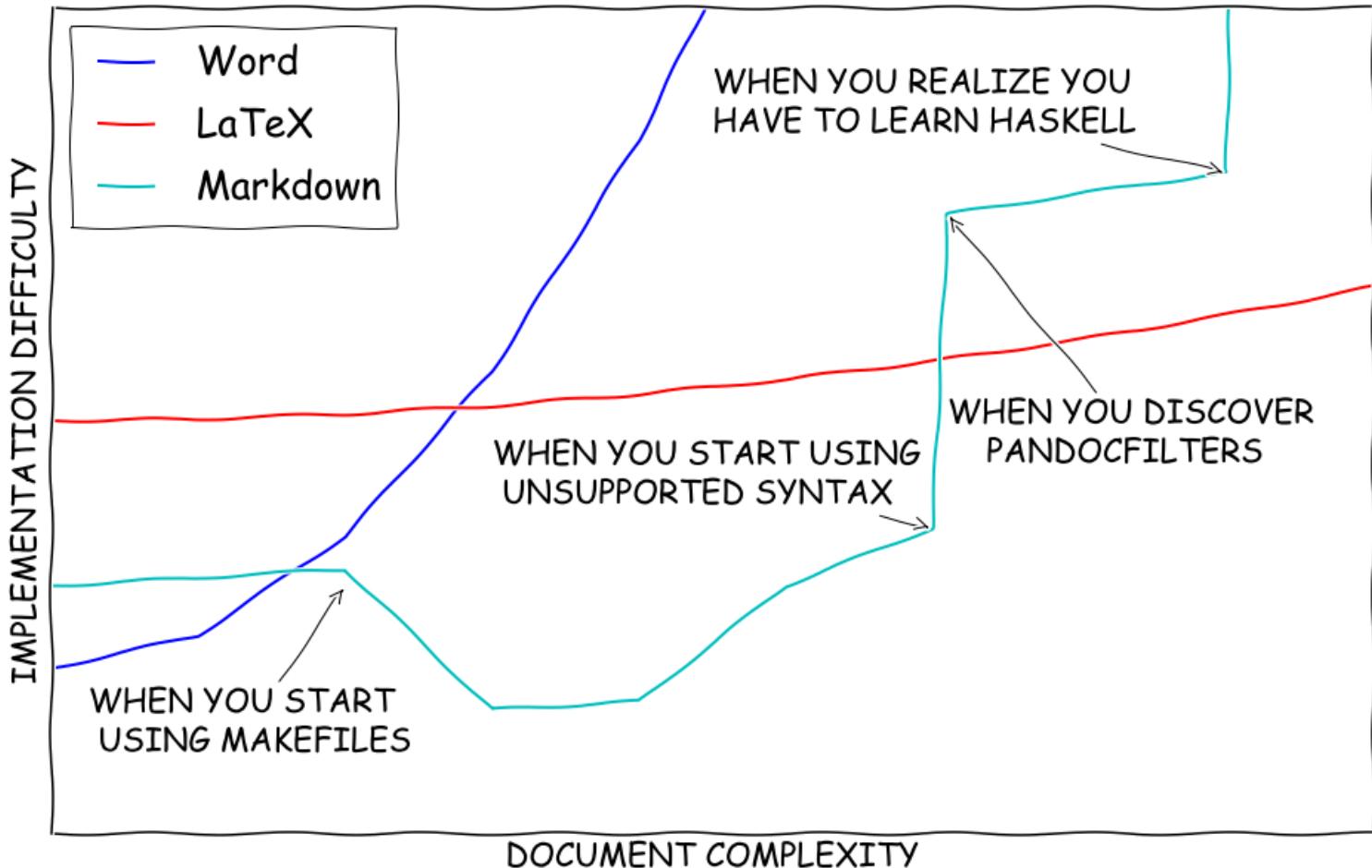
Signature _____

Date _____ / _____ / _____

Overleaf Templates

- ACM: <https://www.overleaf.com/gallery/tagged/acm-official#.WOuOk2e1taQ>
- IEEE: <https://www.overleaf.com/gallery/tagged/ieee-official>
- Elsevier: <https://www.overleaf.com/gallery/tagged/Elsevier>
- Springer: <https://www.overleaf.com/latex/templates/taylor-and-francis-latex-template-for-authors-interact-layout-plus-apa-reference-style/jqhskrssqqzfz>
- Taylor & Francis: <https://www.overleaf.com/latex/templates/taylor-and-francis-latex-template-for-authors-interact-layout-plus-apa-reference-style/jqhskrssqqzfz>
- Nottingham: <https://www.overleaf.com/gallery/tagged/nottingham>

The Learning Curve



Easy LaTeX formatting

Overleaf

The screenshot shows the Overleaf LaTeX editor interface. The main area displays the LaTeX code for a document titled "The Universe". The code includes standard document class definitions, package imports for `article`, `graphicx`, `natbib`, and `hyperref`. It features sections like "Introduction" and "Conclusion", and a figure section with a placeholder image. The right side shows a preview of the document with the title "The Universe" and a small image of a galaxy. At the bottom, there's a registration form with fields for email and password, and options to register using Google or ORCID.

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\title{The Universe}
\author{}
\date{May 2019}
\usepackage{natbib}
\usepackage{graphicx}
\begin{document}
\maketitle
\section{Introduction}
There is a theory which states that if ever anyone discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and amazing.
There is another theory which states that if ever anyone discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and amazing.
\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{universe.jpg}
\end{figure}
\section{Conclusion}
``I always thought something was fundamentally wrong with the universe.'' \url{https://edwardwittenlike.com}
\begin{thebibliography}{99}
\bibliographystyle{plain}
\bibliography{references.bib}
\end{thebibliography}
\end{document}
```

<https://www.overleaf.com/project>

Tables Generator

The screenshot shows the Tables Generator website. It features a LaTeX editor interface with a toolbar for bold, italic, underline, and table operations. A table is displayed with columns labeled A, B, and C, and rows labeled 1 through 5. Below the table, there's a caption input field and a "Generate" button. The generated LaTeX code is shown in a code editor at the bottom, which includes the necessary packages and the table structure.

	A	B	C
1	Col 1	Col 2	Col 3
2	A	1	5
3	B	2	6
4	C	3	7
5	D	4	8

Table caption
Enter table caption here

Label tab:my-table Use \ref{tab:my-table} to refer to your table in LaTeX

Generate

Result (click "Generate" to refresh)

```
% Please add the following required packages to your document preamble:
% \usepackage{graphicx}
\begin{table}[]
\begin{array}{|c|c|c|} \hline
\textbf{A} & \textbf{B} & \textbf{C} \\ \hline
1 & Col 1 & Col 2 \\ \hline
2 & A & 1 & 5 \\ \hline
3 & B & 2 & 6 \\ \hline
4 & C & 3 & 7 \\ \hline
5 & D & 4 & 8 \\ \hline
\end{array}
\end{table}
```

<https://www.tablesgenerator.com>

Live demo

- Nottingham Thesis Template
 - GitHub: <http://github.com/imyueli/NottinghamThesisTemplate>
 - Overleaf Gallery: <https://www.overleaf.com/latex/templates/university-of-nottingham-phd-thesis-template/vfrccfhsyhr>

Sample scripts – Single figure

Script

```
\subsection{Single figure}
\begin{figure}[h]
\centering
\includegraphics[width=0.8\column
nwidth]{images/nottingham-
logo.png}
\caption{Nottingham Logo.}
\label{fig:nottinghamlogo}
\end{figure}
```

Preview

4.1.1 Single figure



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Figure 4.1: Nottingham Logo.

Sample scripts – Figures with sub captions

Script

```
\subsection{Figures with sub captions}

\begin{figure}[h]
    \centering
    \begin{subfigure}[h]{0.45\textwidth}
        \centering
        \includegraphics[width=\textwidth]{images/nottingham-logo.png}
        \caption{Caption A.}
        \label{fig:captiona}
    \end{subfigure}
    \hfill
    \begin{subfigure}[h]{0.45\textwidth}
        \centering
        \includegraphics[width=\textwidth]{images/nottingham-logo.png}
        \caption{Caption B.}
        \label{fig:captionb}
    \end{subfigure}
    \caption{Nottingham Logo.}
\end{figure}
```

Preview

4.1.2 Figures with sub captions



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(a) Caption A.



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(b) Caption B.

Figure 4.2: Nottingham Logo.

Sample scripts – Figures side by side

Script

```
\subsection{Figures side by side}

\begin{figure}[h]
    \centering
    \begin{minipage}[h]{0.45\textwidth}
        \centering
        \includegraphics[width=\textwidth]{images/nottingham-logo.png}
        \caption{Caption C.}
        \label{fig:captionc}
    \end{minipage}
    \hfill
    \begin{minipage}[h]{0.45\textwidth}
        \centering
        \includegraphics[width=\textwidth]{images/nottingham-logo.png}
        \caption{Caption D.}
        \label{fig:captiond}
    \end{minipage}
\end{figure}
```

Preview

4.1.3 Figures side by side



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Figure 4.3: Caption C.



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Figure 4.4: Caption D.

Sample scripts – Tables

Script

```
\begin{table}[h]
\caption{Table caption.}
\label{tb:table-example}

\begin{tabularx}{\textwidth}{xxx}
\toprule
\textbf{Col 1} & \textbf{Col 2} & \textbf{Col 3} \\
\midrule
\textbf{A} & 1 & 5 \\
\textbf{B} & 2 & 6 \\
\textbf{C} & 3 & 7 \\
\textbf{D} & 4 & 8 \\
\bottomrule
\end{tabularx}
\end{table}
```

Preview

Table 4.1: Table caption.

Col 1	Col 2	Col 3
A	1	5
B	2	6
C	3	7
D	4	8

Sample scripts – Enumeration

Script

```
\subsubsection{Enumeration}
```

```
\begin{enumerate}
```

```
    \item First item.
```

```
    \item Second item.
```

```
    \item Third item.
```

```
\end{enumerate}
```

Preview

Enumeration

1. First item.

2. Second item.

3. Third item.

Sample scripts – Alphabet list

Script

```
\subsubsection{Hypothesis}

\begin{enumerate}[font={\bfseries},label={H\arabic*},align=left]
    \item First hypothesis.
    \item Second hypothesis.
    \item Third hypothesis.
\end{enumerate}
```

Preview

Hypothesis

H1. First hypothesis.

H2. Second hypothesis.

H3. Third hypothesis.

Sample scripts – Itemised list

Script

```
\subsection{Itemised list}

\begin{itemize}
    \item First item.
    \item Second item.
    \item Third item.
\end{itemize}
```

Preview

4.3.2 Itemised list

- First item.
- Second item.
- Third item.

Sample scripts – Equations

Script

```
\begin{equation}
\label{eq:CR}

CR = \frac{(\sum_{i=1}^n \lambda_i)^2}{(\sum_{i=1}^n \lambda_i)^2 + (\sum_{i=1}^n \delta_i)}
\end{equation}

\begin{equation}
\label{eq:AVE}

AVE = \frac{\sum_{i=1}^n \lambda_i^2}{n}
\end{equation}

\begin{equation}
\label{eq:CA}

CA = \frac{n}{n-1} \left(1 - \frac{\sum_{i=1}^n V_i}{V_t}\right)
\end{equation}
```

Preview

$$CR = \frac{(\sum_{i=1}^n \lambda_i)^2}{(\sum_{i=1}^n \lambda_i)^2 + (\sum_{i=1}^n \delta_i)} \quad (5.1)$$

$$AVE = \frac{\sum_{i=1}^n \lambda_i^2}{n} \quad (5.2)$$

$$CA = \frac{n}{n-1} \left(1 - \frac{\sum_{i=1}^n V_i}{V_t}\right) \quad (5.3)$$

Publications

- Getting started
 - Read your submission guideline
 - Check available LaTeX templates
- Preparations
 - The figures
 - The bib file
- Editing
 - Text (\&, \%)
 - Figures
 - graphicx, subcaption
 - Tables
 - tabularx, longtable
 - multicol, multirow
 - Citations
 - Natbib e.g.
`citep[see][]{citekey2020}`

Hands-on practice and Q&A

Please start converting your manuscript to a LaTeX project.

- Reports
- Previous assignments
- Meeting minutes
- Paper submission
- ...

Raise up your hand if you have any questions.

Thank you.

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GitHub: <https://github.com/imyueli>

ResearchGate: http://researchgate.net/profile/Yue_Li167