

LATEX FOR LINGUISTS

Workshop at School of Humanities and Social Sciences,
Nanyang Technological University

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KDU College Penang, Malaysia

AGENDA

Basics

Typesetting Text

Structuring and Cross-referencing Text

Citations and References

Typesetting Mathematics

Graphics, Figures and Tables

Multilingual Text

Linguistic Examples and Interlinear Glosses

Presentation Slides

BASICS

MINIMAL DOCUMENT STRUCTURE

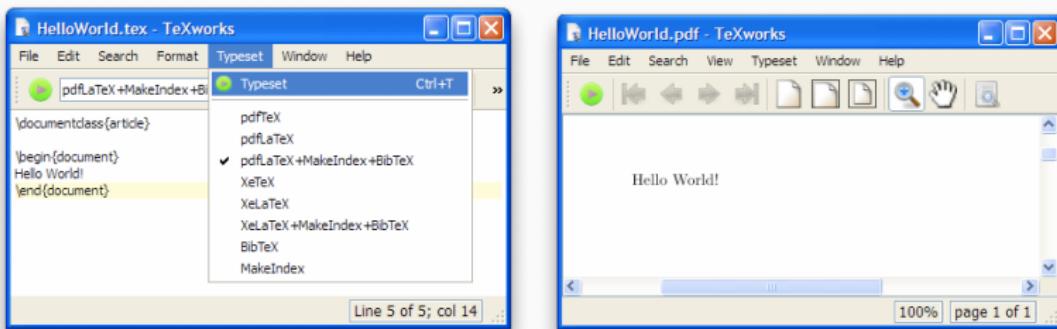
```
%% helloworld.tex - First LaTeX document
\documentclass{article}

\begin{document}
Hello World!
\end{document}
```

- Standard document classes:
 - **article**: for short reports, articles in proceedings or journals, etc.
 - **book**: for real books.
 - **report, letter, ...**
- Other document classes: **beamer, scrartcl, memoir, recipe, resume, leaflet, exam, beamerposter...**

LATEX WORKFLOW IN TEXWORKS

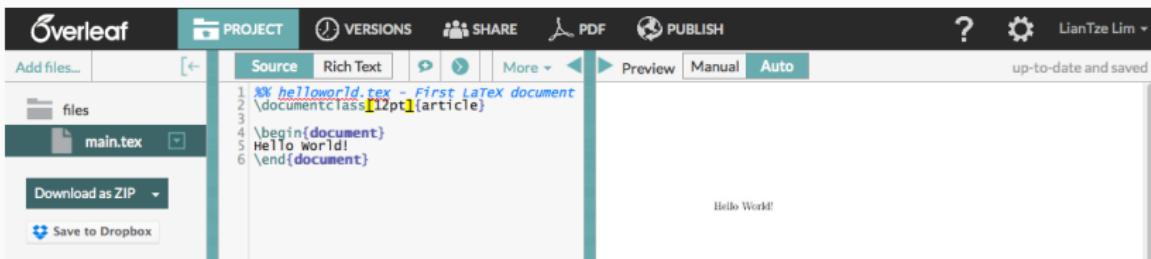
1. Create, edit, save .tex file
2. Make sure Typeset operation set to pdfLaTeX+MakeIndex+BibTeX
3. Typeset ($\text{Ctrl} + \text{T}$ or 
4. Correct errors, repeat Typeset
5. View Output



Tip: Ctrl + click in source to jump to corresponding point in PDF (and vice versa)

LATEX WORKFLOW IN OVERLEAF

- ‘Auto’ mode: compiles and previews automatically as you edit
- ‘Manual’ mode: $\text{Ctrl} + \boxed{\cdot}$ to trigger compile



- Click in PDF to position cursor in Source.
- Right-click in Source code, $\boxed{\text{Position in preview}}$

LATEX BASICS

- Commands (0 or more options/arguments)

```
\cmdname[option1, option2...]{arg1}{arg2}...
```

- Environments

```
\begin{envname}  
environment contents  
\end{envname}
```

- Comments: the % character.

```
% You won't see this line in the output.  
You will see this line %-- but nothing after this!
```

ANOTHER EXAMPLE

```
%%%% document class declaration with options
\documentclass[a4paper,12pt]{article}

%%%% document preamble starts...
% loading packages: for extra capabilities
\usepackage{marvosym}

% "meta" information and other definitions
\author{Lim Lian Tze}
\title{Hello}

%%%% document preamble ends, document body starts
\begin{document}
\maketitle
Hello World! \Smiley
\end{document}
```

HOW DO I KNOW WHAT COMMANDS HATH A PACKAGE?

- Google!
- Package documentation

Mik_ET_EX  Run a command

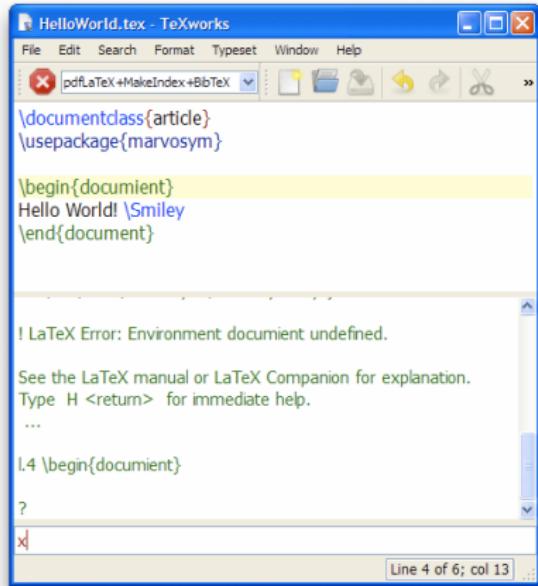
then type `mthelp <package name>`

then pick usually the first file

T_EXLive \$ `texdoc <package name>`

Online <http://texdoc.net/pkg/<package name>>

AARRGGGH! ERRORS!



- Error message and line number in the **Output panel**
- In the **Console bar**:
 - Hit **Enter** (perhaps repeatedly) to continue anyway. May still get a PDF output but with erroneous content.
 - Hit **x** then **Enter**, or click **×** to abort.
- Correct error, retry.

PACKAGE INSTALLATION ON MIK_TE_X

-  MikTeX 2.9 > Maintenance (Admin) > Settings (Admin)
- Set **On-the-fly installation** to **Yes** or **Ask me first**.
- During compilation, missing packages will be installed on the fly.
(But no progress bar...)
-  MikTeX 2.9 > Maintenance (Admin) > Package Manager (Admin)
- Install, delete packages from here, using the  and  buttons

PACKAGE INSTALLATION ON MAC

- Start the TeX Live Utility
- Click on the **Pacakges** tab
- Install, delete packages from here (right-click on the required packages)

TEXT

WHITE SPACE AND NEW LINES

- Space and tab characters
 - White space does not (usually) matter
 - \TeX determines inter-word spacing to ensure legibility

WHITE SPACE AND NEW LINES (CONT.)

- Paragraph breaking
 - Leave a blank line between text to break paragraph
 - Multiple blank lines won't give more vertical spacing
 - TeX determines inter-line spacing to ensure legibility
 - Do not use `\\"` to create 'new paragraphs'!

WHITE SPACE AND NEW LINES (CONT.)

- Manual line- and page-breaking?
 - (are you sure?)
 - \TeX decides where to break lines, pages to ensure legibility
 - if you insist: \\, \pagebreak

EFFECTS OF WHITE SPACE

```
1 This is to demonstrate % TODO: comments again!
2 typesetting plain text in \LaTeX. It doesn't care much about
3 multiple blank spaces and tabs.
4
5 "Multiple blank lines" have the same effect as one blank line.
6
7
8 Blank lines are for separating paragraphs (content), but not
how far they are apart (style).
```

This is to demonstrate typesetting plain text in
L^AT_EX. It doesn't care much about multiple blank
spaces and tabs.

"Multiple blank lines" have the same effect as one
blank line.

Blank lines are for separating paragraphs (con-
tent), but not how far they are apart (style).

SPECIAL CHARACTERS

#	(hash, pound)	:	\#
\$	(dollar)	:	\\$
%	(percent)	:	\%
^	("hat")	:	\^{}{}
&	(ampersand)	:	\&
_	(underscore)	:	_
{	(left brace)	:	\{
}	(right brace)	:	\}
~	(tilde)	:	\~{}{}
~	(wide tilde)	:	\$\sim\$
"	(open double quotes)	:	``
"	(close double quotes)	:	''
@	(alias)	:	\string@

VERBATIM TEXT

```
1 \begin{verbatim}
2 "I'm tired of escaping characters!"
3 Type all the special characters you want, 100%!
4 No need to escape your # and $ and ^ here,
5 and it respects your line breaks
6     and whitespaces, too!
7 \end{verbatim}
8
9 Inline: \verb|mem_buffer|.
```

"I'm tired of escaping characters!"
Type all the special characters you want, 100%!
No need to escape your # and \$ and ^ here,
and it respects your line breaks
 and whitespaces, too!

Inline: `mem_buffer`.

URLS AND FILE PATHS

```
\usepackage{url,menukeys} % this line in preamble!
```

```
...
```

You can find this presentation at

```
\url{http://liantze.googlepages.com/latextypesetting}.
```

Your MiKTeX installation is most likely at

```
\directory{C:/Program Files/MiKTeX 2.9}.
```

Oh and the `menukeys` package can do `\menu{File > Save > Save As...}` and `\keys{Ctrl + X}`.

You can find these slides at

<http://liantze.googlepages.com/latextypesetting>.

Your MiKTeX installation might be at C:>Program Files>MiKTeX 2.9.

Oh and the `menukeys` package can do `File > Save > Save As...` and `Ctrl + X`.

SPECIAL SYMBOLS: CHARACTERS WITH DIACRITIC MARKS

- Diacritic marks: e.g. à, á, â, ã, ä, å, æ
 - no input methods: \`a, \'a, ^a, ~a, "a, r a, ae
 - with input methods: (TeXworks and Overleaf save files as UTF-8 by default)

```
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
...
àáâãäåæ
```

MORE SPECIAL SYMBOLS

- Common text symbols: e.g. © ® ™ °

```
\textcopyright \textregistered \texttrademark \textdegree
```

- Mathematical symbols: a whole slew of them!
- “How would I know what command produces symbol X ?”
 1. The Comprehensive L^AT_EX Symbol List
(<http://www.texdoc.net/pkg/comprehensive>)

MORE SPECIAL SYMBOLS (CONT.)

2. Detexify (<http://detexify.kirelabs.org/>)

Detexify² - LaTeX symbol classifier

classify symbols blog

Draw here!

Did this help? Hosting Detexify costs money and if it helps you may consider helping to pay the hosting bill.

DONATE https://www.paypal.com/cgi-bin/webscr?cmd=_s-xclick&hosted_button_id=1473856&source=detexify

Score: 48.8876262463213
\usepackage{textcomp}
\textdiscount
textmode

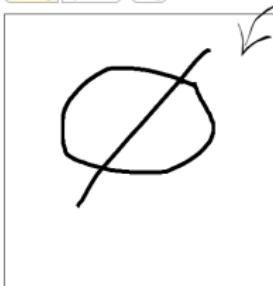
Score: 48.8876262463213
\usepackage{wasysym}
\varnothing
mathmode

Score: 48.8876262463213
\usepackage{wasysym}
\clock
textmode & mathmode

Score: 48.8876262463213
\o
mathmode

clear

What is this?



FONT FAMILIES AND EFFECTS

<code>\textrm{roman}</code>	→ roman
<code>\textsf{sans serif}</code>	→ sans serif
<code>\texttt{typewriter}</code>	→ typewriter
<code>\textbf{bold}</code>	→ bold
<code>\textit{italics}</code>	→ <i>italics</i>
<code>\underline{underline}</code>	→ <u>underline</u>
<code>\textsc{Small Caps}</code>	→ Small Caps
<code>\emph{emphasis}</code>	→ <i>emphasis</i>

- Commands can be nested:

`\texttt{\emph{Like this.}}}` → *Like this.*

FONT SIZES

Font size changing commands relative to base font size given in `documentclass` option

{\tiny Text}	→ Text
{\scriptsize Text}	→ Text
{\footnotesize Text}	→ Text
{\small Text}	→ Text
{\normalsize Text}	→ Text
{\large Text}	→ Text
{\Large Text}	→ Text
{\LARGE Text}	→ Text
{\huge Text}	→ Text
{\Huge Text}	→ Text

LIST-LIKE ENVIRONMENTS

Bulleted Lists

```
\begin{itemize}  
\item one  
\item two  
\end{itemize}
```

- one
- two

Numbered Lists

```
\begin{enumerate}  
\item one  
\item two  
\end{enumerate}
```

1. one
2. two

Description Lists

```
\begin{description}  
\item[one] is here  
\item[two] is there  
\end{description}
```

- one** is here
two is there

Lists can be nested up to 6 levels deep.

MORE ON CHANGING FONTS

- Default document font: Computer Modern (designed by Knuth)
 - Computer Modern Serif
 - Computer Modern Sans Serif
 - Computer Modern Typewriter
- Use Times Roman + Helvetica + Courier as default:

```
\usepackage{mathptmx}
\usepackage[scaled=.89]{helvet} % Helvetica is LARGE
\usepackage{courier}
```

- Other fonts can be loaded via relevant packages (<http://www.tug.dk/FontCatalogue/>)
- But be careful about improper font combinations!

STRUCTURE

SECTIONING COMMANDS

- article: section, subsection, subsubsection.
- book: part (not usually used), chapter, section, ...

```
\documentclass{article}
```

```
\begin{document}
```

```
\section{Introduction}
```

Introduce your topic here.

```
\section{Background}
```

A line or two.

```
\subsection{Related Work}
```

Review others' work.

```
\subsection{Problems}
```

Unresolved issues.

```
\end{document}
```

1 Introduction

Introduce your topic here.

2 Background

A line or two.

2.1 Related Work

Review others' work.

2.2 Problems

Unresolved issues.

CROSS-REFERENCING

```
\documentclass{article}
\begin{document}
\section{Introduction}\label{sec:intro}
Introduce your topic here.

\section{Background}
\label{sec:background}
Mention section \ref{sec:intro} again.

\subsection{Related Work}
\label{sec:related}
Review others' work.

\subsection{Problems}
\label{sec:problems}
In section \ref{sec:related} on page
\pageref{sec:related}\ldots
\end{document}
```

“Bookmark” with `\label`,
reference with `\ref`, `\pageref`

1 Introduction

Introduce your topic here.

2 Background

Mention section 1 again.

2.1 Related Work

Review others' work.

2.2 Problems

In section 2.1 on page 1...

OTHER GOODIES

- Author information (in preamble)
 - `\author`: Name(s) of authors
 - `\title`: Title of the article/book/report
 - `\date`: Specify a date
- Other custom fields for respective journals, conference styles
(refer to publisher's instructions and templates)

OTHER GOODIES (CONT.)

- Routine tasks (in document body)
 - Abstract:

```
\begin{abstract}  
My text here.  
\end{abstract}
```

- Footnote: ...why?`\footnote{why not?}`
- Margin notes: ...why?`\marginpar{why not?}`
- Auto-generate title: `\maketitle`
- Auto-generate TOC: `\tableofcontents`
`(\listoffigures,\listoftables` – we'll try later)

PDF HYPERLINKS AND BOOKMARKS

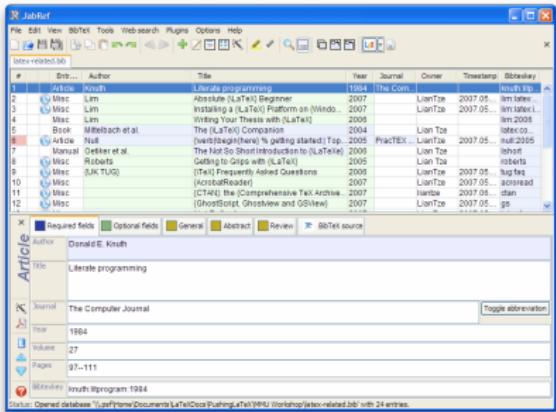
- Just load `hyperref` package
- But load it as *last* package!
- Coloured borders around links in PDF will not show up when printed, don't worry!

REFERENCES

EXTERNAL (CENTRALISED) REFERENCE DATABASE

latex-related.bib

```
@ARTICLE{knuth:1984,
  author = {Donald E. Knuth},
  title = {Literate programming},
  journal = {The Computer Journal},
  year = {1984},
  volume = {27},
  number = {2},
  pages = {97--111},
  address = {Oxford, UK},
  publisher = {Oxford University
  Press}
}
```



JabRef: Java-based reference manager
<http://jabref.sourceforge.net>

OR USE MENDELEY, ZOTERO, CITEULIKE...
AND EXPORT .BIB ☺

CITING FROM EXTERNAL .bib FILE

```
\documentclass{article}

\begin{document}
\cite{latex:companion} is a useful book. Knuth
introduced the literate programming paradigm while
developing \TeX{}.\ \cite{knuth:1984}.

\bibliographystyle{plain}
\bibliography{latex-related}
\end{document}
```

UNIFIED STYLE

- Download from <http://celxj.org/> (Scroll to the bottom)
- Put `unified bst` in the same folder as your `.tex`

```
\usepackage{natbib}

\cite{John1991}

\citet{John1991}

\citet{John1991}

\bibliographystyle{unified}
\bibliography{latex-related}
```

WHEN CHANGING BIBLIOGRAPHY STYLES, YOU MAY
NEED TO DELETE .BBL FILE MANUALLY

MLA STYLE

- Download from <https://www.ctan.org/tex-archive/biblio/bibtex/contrib/mla>
- Put `mla.bst` in the same folder as your `.tex`

```
\usepackage{mla} % no natbib!!  
  
\cite{John1991}  
  
\bibliographystyle{mla}  
\bibliography{latex-related}
```

natbib: FLEXIBLE CITATIONS

- Recommended:
 - `\usepackage{natbib}` for author-year styles
 - `\usepackage{apacite}\bibliographystyle{apacite}`

- `natbib` citation commands:

`\citep{knuth:1984}` → (Knuth, 1984)

`\citet{knuth:1984}` → Knuth (1984)

(Careful! `\cite` becomes `\citet` if using `natbib`!)

`\citep[section 2.1]{knuth:1984}` → (Knuth, 1984, section 2.1)

`\citeauthor{knuth:1984}` → Knuth

`\citeyear{knuth:1984}` → 1984

- (`apacite` supports `\citeauthor` and `\citeyear` too)

- See also

http://en.wikibooks.org/wiki/LaTeX/Bibliography_Management

NOTES ABOUT NAMES

author = {John Doe}	→ (Doe, 2002)
author = {J. Doe}	→ (Doe, 2002)
author = {Doe, John}	→ (Doe, 2002)
author = {John von Neumann}	→ (von Neumann, 1945)
author = {Lim Lian Tze}	→ (Tze, 2004)
author = {Lim, Lian Tze}	→ (Lim, 2004)
author = {John Doe and Allen Smith and Lee, Ai Chong}	
→ (Doe, Smith and Lee, 2003)	

MATHS

MATHEMATICS WITH amsmath PACKAGE

`\eqref{eq:golden:ratio:fibonacci}` relates the golden ratio and the Fibonacci series. Recall that the golden ratio, $\phi = \frac{1}{2}(1 + \sqrt{5})$.

```
\begin{equation}\label{eq:golden:ratio:fibonacci}
\phi = 1 + \sum^{\infty}_{n=1} \frac{(-1)^{n+1}}{F_n F_{n+1}}
\end{equation}
```

(1) relates the golden ratio and the Fibonacci series.

Recall that the golden ratio, $\phi = \frac{1}{2}(1 + \sqrt{5})$.

$$\phi = 1 + \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{F_n F_{n+1}} \quad (1)$$

Source: <http://mathworld.wolfram.com/GoldenRatio.html>

...TOO MUCH “TREASURE” TO DESCRIBE HERE!

- <http://en.wikibooks.org/wiki/LaTeX/Mathematics>
- <http://www.andy-roberts.net/misc/latex/latextutorial9.html>, [latextutorial10.html](http://www.andy-roberts.net/misc/latex/latextutorial10.html)
- Scribble an equation, get the \LaTeX code:
<http://webdemo.myscript.com/#/demo/equation>

ANOTHER MATHS EXAMPLE

[...] A family of wavelets can be constructed from a function $\psi(x)$, sometimes known as a “mother wavelet,” which is confined in a finite interval. “Daughter wavelets” $\psi^{a,b}(x)$ are then formed by translation (b) and contraction (a). [...]

An individual wavelet can be defined by

$$\psi^{a,b}(x) = |a|^{-\frac{1}{2}} \psi\left(\frac{x-b}{a}\right).$$

Then

$$W_\psi(f)(a, b) = \frac{1}{\sqrt{a}} \int_{-\infty}^{\infty} f(t) \psi\left(\frac{t-b}{a}\right) dt,$$

and Calderón’s formula gives

$$f(x) = C_\psi \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} \langle f, \psi^{a,b} \rangle \psi^{a,b}(x) a^{-2} da db.$$

A common type of wavelet is defined using Haar functions.

Source: <http://mathworld.wolfram.com/Wavelet.html>

FIGURES & TABLES

GRAPHICS FILE FORMAT

`pdflatex` embeds JPG, PNG and PDF graphic files

```
\usepackage{graphicx}  
...  
\includegraphics[width=.3\textwidth]{NTU-logo}
```

(no file extension → automatically looks for .jpg, .png, .pdf)



Other ways to specify the size:

`width=5cm, height=120mm, scale=1.1 ...`

FIGURES

```
\begin{figure}[htb!]\centering
\includegraphics[width=.3\textwidth]{MMU}
\caption{MMU's logo}
\label{fig:mmu:logo}
\end{figure}
```

Figure `\ref{fig:mmu:logo}` depicts MMU's logo.



Figure 1: MMU's logo

Figure 1 depicts MMU's logo.

TABULAR MATERIAL

```
\begin{tabular}{| l | c || r |}
\hline
one      & two two          & three three tree \\ \hline
one one & two two two    & three                  \\ \hline
one one one & two   & three three       \\ \hline\hline
\multicolumn{2}{|l||}{In the end} & What?!    \\ \hline
\end{tabular}
```

one	two two	three three tree
one one	two two two	three
one one one	two	three three
In the end		What?!

DO YOURSELF A FAVOUR AND USE
<http://www.tablesgenerator.com/>. ☺

TABLES

```
\begin{table}[hbt!]\centering
\caption{Sample table}\label{tab:sample}
\begin{tabular}{| l | c || r |}
\hline
one & two two & three three tree \\ \hline
one one & two two two & three \\ \hline
\end{tabular}
\end{table}
```

Table `\ref{tab:sample}` is a very simple example.

Table 1: Sample table

one	two two	three three tree
one one	two two two	three

Table 1 is a very simple example.

MULTILINGUAL TEXT

RECAP: CHARACTERS WITH DIACRITIC MARKS

- Diacritic marks: e.g. à, á, â, ã, ä, å, æ
 - no input methods: \`a, \'a, ^a, ~a, "a, r a, ae
 - with input methods: (TeXworks and Overleaf save files as UTF-8 by default)

```
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
...
àáâãäåæ
```

UTF-8 ENGINES

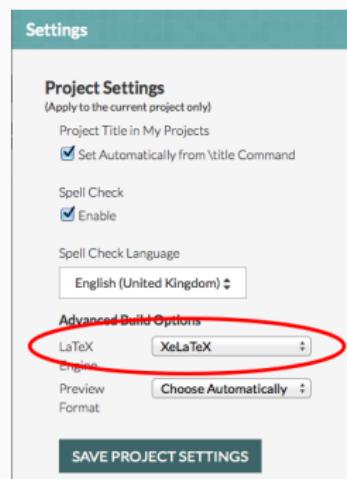
- or compile with Xe^{TEX}, Lua^{TEX} engine – no need to load extra packages

TeXworks Typeset operation set to XeLaTeX+MakeIndex+BibTeX

Overleaf = XeLaTeX

```
\documentclass{article}
```

```
\begin{document}  
àáâãäåæ wheeee  
\end{document}
```



FONT SELECTION IN X_ƎTEX

```
\usepackage{fontspec}
\setmainfont[Ligatures=TeX]{Times New Roman}
\setsansfont{Arial}
\setmonofont{Consolas}
```

- Does the journal accept X_ƎTEX?
- Does the journal have the necessary fonts?
- (Ask first...)

IPA SYMBOLS: PDF_LT_EX

```
\usepackage{tipa}  
  
\textipa{fə"nɛtɪks}
```

- fə'netɪks
- Cheat sheet: <http://www.ling.ohio-state.edu/events/lcc/tutorials/tipachart/tipachart.pdf>

IPA SYMBOLS: X₃TEX

```
\usepackage{fontspec}
\newfontfamily{\ipafont}{Doulos SIL}

{\ipafont fə'netɪks}
```

- fə'netɪks

- Other IPA fonts:

[http://ipa4linguists.pbworks.com/w/page/4325763/
Cool%20free%20IPA%20fonts%20to%20download](http://ipa4linguists.pbworks.com/w/page/4325763/Cool%20free%20IPA%20fonts%20to%20download)

tipa + X_ET_EX

If you'd like to use tipa in X_ET_EX, use these code:

```
\usepackage{tipa} % Must come before fontspec
\usepackage{fontspec}
\setmainfont[Ligatures=TeX]{Times New Roman}
...
\newfontfamily{\ipa}{Doulos SIL}
\AtBeginDocument{
    \renewcommand\textipa[1]{{\ipa\textipaencoding #1}}
}

% Both of the following will now work
{\ipa fə'netiks}
\textrmipa{fə"nEtIks}
```

CHINESE IN PDFLATEX: CJKutf8

```
\usepackage{CJKutf8}

\begin{CJK}{UTF8}{gbsn}
可以打中文吗？
\end{CJK}

\begin{CJK}{UTF8}{gkai}{竟然可以！}
```

可以打中文吗？

竟然可以！

JAPANESE, KOREAN IN PDFLATEX: CJKutf8

```
%% Japanese. Try also maru, goth
\begin{CJK}{UTF8}{min}
露の世は 露の世ながら さりながら
\end{CJK}
```

```
% Korean
\begin{CJK}{UTF8}{mj}
편편황조 자옹상의 염아지독 수기여귀
\end{CJK}
```

CJK IN X_ET_EX: xeCJK

- Default font: Fandol (Download from <http://www.ctan.org/tex-archive/fonts/fandol> and install in your OS!)

```
\usepackage{xeCJK}
```

一般字体为『宋体』。

强调用 \textbf{『黑体』}。

中文没有斜体，要用 \emph{『楷体』}。

代码可以用 \texttt{『仿宋』}。

一般字体为『宋体』。无衬线体用『黑体』。中文没有斜体，要用『楷体』。代码可以用『仿宋』。

USING OTHER CJK FONTS

- (But does the other party esp. publishers have the same fonts?)

```
\setCJKmainfont[
    BoldFont={Adobe Heiti Std},
    ItalicFont={Adobe Kaiti Std}
    {Adobe Song Std}
\setCJKsansfont{Adobe Heiti Std}
\setCJKmonofont{Adobe Fangsong Std}

\newCJKfontfamily{\jpfont}{Meiryo}

\jpfont 露の世は 露の世ながら さりながら}
```

LINGUISTIC EXAMPLES AND INTERLINEAR GLOSSES

PACKAGES FOR LINGUISTIC EXAMPLES

`gb4e` very popular, but tends to have problems with new packages

`expex` newer, very flexible

So for each following example: `\usepackage{expex}`

LINGUISTIC EXAMPLES

\ex

This is an example.

\xe

\ex

This is another example.

\xe

(1) This is an example.

(2) This is another example.

EXAMPLE WITH PARTS

```
\pex Here are two famous sayings.  
\a A stitch in time saves nine.  
\a Saved by the bell.  
\xe
```

- (3) Here are two famous sayings.
- a. A stitch in time saves nine.
 - b. Saved by the bell.

ALIGNED JUDGEMENT MARKS

```
\pex[*=?*]    %% Longest judgement mark
\a There is a pair of pants on the floor.
\a \ljudge{?*} There are a pair of pants on the floor.
\a \ljudge{*} There is the pair of pants on the floor.
\xe
```

- (4) a. There is a pair of pants on the floor.
- b. ?*There are a pair of pants on the floor.
- c. *There is the pair of pants on the floor.

INTERLINEAR GLOSSES

```
\ex\deftagex{basic} %% \deftagex adds a label for referencing
\begingl
\gla An example formatted with expex // 
\glb \textsc{an} example formatted \textsc{with} expex //
\glft 'A free translation.'//
\endgl
\xe
```

We have our first glossing example (\getref{basic})!

INTERLINEAR GLOSSES (CONT.)

- (5) *An example formatted with expex*
AN example formatted WITH expex

'A free translation.'

We have our first glossing example (5)!

FOUR LINES INTERLINEAR GLOSSES

```
\ex
\begin{gl}
\gla Some authors like four lines //
\glb some {author -s} like four {line -s} //
\glc some {author \textsc{-pl}} like four {line
\textsc{-pl}}//
\glft Some authors like an extra line for morpheme
breaks. This is OK.//
\end{gl}
\xe
```

FOUR LINES INTERLINEAR GLOSSES (CONT.)

- (6) *Some authors like four lines*
some author -s like four line -s
some author -PL like four line -PL

Some authors like an extra line for morpheme breaks.

MORE GOODIES FOR LINGUISTS

See <http://en.wikibooks.org/wiki/LaTeX/Linguistics>

SLIDES

CREATING PRESENTATIONS WITH **beamer**

- Quite a few choices to creating presentation slides...
- ...but **beamer** is (one of the) most versatile
(the manual has 200+ pages; use as a reference)
- This presentation was created with **beamer**!
- To run slideshow in Acrobat Reader:
 - **Ctrl** + **L** to go fullscreen
 - Spacebar or arrow keys ($\leftarrow \rightarrow$) to go to next/previous slide
 - **Esc** to exit slideshow

SIMPLE beamer EXAMPLE

```
\documentclass{beamer}

\author{Lian Tze}
\title{Quick Beamer Example}
\institute{NLP-SIG, MMU}
\date{8 March 2010}

\begin{document}

\begin{frame}
\maketitle
\end{frame}

\section{Introduction}
\subsection{Hello!}
```

SIMPLE beamer EXAMPLE (CONT.)

```
\begin{frame}  
  \frametitle{Hello World!}
```

This is my first presentation with \LaTeX.

```
\begin{itemize}  
  \item Beamer has many features  
  \item This is just a simple demo  
\end{itemize}  
\end{frame}
```

```
\subsection{Maths}  
\begin{frame}  
  \frametitle{Maths work, too}  
\begin{equation}
```

SIMPLE beamer EXAMPLE (CONT.)

```
y = ax^2 + bx + c
\end{equation}
\end{frame}

\section{Conclusion}
\begin{frame}
\frametitle{It's Your Decision}
\begin{itemize}
\item Give \LaTeX\ a try
\item You might hate it, you might love it
\item Now that you've tried it, you can decide if it's
for you
\end{itemize}
\end{frame}

\end{document}
```

SIMPLE beamer EXAMPLE (CONT.)

Quick Beamer Example

Lian Tze

NLP-SIG, MMU

8 March 2010

Hello World!

This is my first presentation with \LaTeX .

- ▶ Beamer has many features
- ▶ This is just a simple demo

SIMPLE beamer EXAMPLE (CONT.)

Maths work, too

$$y = ax^2 + bx + c \quad (1)$$

It's Your Decision

- ▶ Give \LaTeX a try
- ▶ You might hate it, you might love it
- ▶ Now that you've tried it, you can decide if it's for you

MAKING ITEMS APPEAR ONE BY ONE

(Only applicable for `itemize/enumerate!`)

```
\begin{itemize}[<+->]
\item Beamer has many features
\item This is just a simple demo
\item Have a go!
\end{itemize}
```

ORDER OF APPEARANCE

```
\begin{itemize}
\item<1-> Beamer has many features
\item<3-> This is just a simple demo
\item<2-> Have a go!
\end{itemize}
```

OR JUST PAUSING AT A SPECIFIC POINT

```
\begin{itemize}
\item Beamer has many features
\item This is just a simple demo
\pause
\item Have a go!
\end{itemize}
```

WHEN PRINTING...

- You probably won't want the animated bullets one by one, so use the **trans** mode: `\documentclass[...,\textcolor{brown}{trans}]{beamer}`
- Add these code for printing 4-up slides in **handout** mode:

```
\documentclass[...,\textcolor{green}{handout}]{beamer}
\mode<\textcolor{brown}{handout}>{
    \usepackage{pgfpages}
    \pgfpagesuselayout{4 on 1}[a4paper,landscape,border
        shrink=8mm]
}
```

BEAMER PRESENTATION THEMES

- Try these:
 - `\usetheme{CambridgeUS}`
 - `\usetheme{Singapore}`
 - `\usetheme{Montpellier}`
 - `\usetheme{Warsaw}`
 - `\usetheme{Goettingen}`
- Colour schemes, e.g. `\usecolortheme{crane}`
- <http://www.hartwork.org/beamer-theme-matrix/>
- Other customisations, including defining your own themes
- Try googling for more themes; e.g.
<http://staff.science.uva.nl/~koppejan/misc/latex.html>

BEAMER PRESENTATION THEMES (CONT.)

CambridgeUS

Quick Beamer Example
Lian Tze
NUS-MI, 4440
8 March 2008

Hello World!

This is my first presentation with iTeX.
• Beamer has many features
• This is just a simple demo

Maths work, too

$y = ax^2 + bx + c$
Theorem (Block)
• You can put things in a block for emphasis
• Definitions, theorems, examples....

It's Your Decision

• Give iTeX a try
• You might hate it, you might love it
• Now that you've tried it, you can decide if it's for you

Singapore

Quick Beamer Example
Lian Tze
NUS-MI, 4440
8 March 2008

Hello World!

This is my first presentation with iTeX.
• Beamer has many features
• This is just a simple demo

Maths work, too

$y = ax^2 + bx + c$
Theorem (Block)
1. You can put things in a block for emphasis
2. Definitions, theorems, examples....

It's Your Decision

• Give iTeX a try
• You might hate it, you might love it
• Now that you've tried it, you can decide if it's for you

Montpellier

Quick Beamer Example
Lian Tze
NUS-MI, 4440
8 March 2008

Hello World!

This is my first presentation with iTeX.
• Beamer has many features
• This is just a simple demo

Maths work, too

$y = ax^2 + bx + c$
Theorem (Block)
1. You can put things in a block for emphasis
2. Definitions, theorems, examples....

It's Your Decision

• Give iTeX a try
• You might hate it, you might love it
• Now that you've tried it, you can decide if it's for you

Warsaw

Quick Beamer Example
Lian Tze
NUS-MI, 4440
8 March 2008

Hello World!

This is my first presentation with iTeX.
• Beamer has many features
• This is just a simple demo

Maths work, too

$y = ax^2 + bx + c$
Theorem (Block)
• You can just things in a block for emphasis
• Definitions, theorems, examples....

It's Your Decision

• Give iTeX a try
• You might hate it, you might love it
• Now that you've tried it, you can decide if it's for you

Goettingen

Quick Beamer Example
Lian Tze
NUS-MI, 4440
8 March 2008

Hello World!

This is my first presentation with iTeX.
• Beamer has many features
• This is just a simple demo

Maths work, too

$y = ax^2 + bx + c$
Theorem (Block)
1. You can put things in a block for emphasis
2. Definitions, theorems, examples....

It's Your Decision

• Give iTeX a try
• You might hate it, you might love it
• Now that you've tried it, you can decide if it's for you

JUST CHANGING THE MAIN COLOUR SCHEME

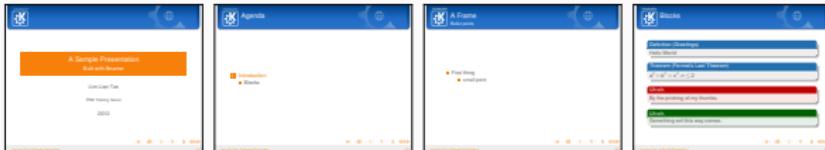
```
\documentclass[xcolor={dvipsnames,x11names,svgnames}]{beamer}

\usetheme{Singapore}
\usecolourtheme[named=Maroon]{structure}
```



See <http://texdoc.net/pkg/xcolor> pp. 38–40 for pre-defined colour names

OTHER THEMES FROM THE WEB



oxygen (KDE): <http://www.kde.org/kdeslides/>

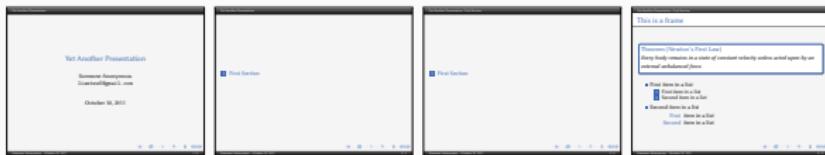


Manhattan: (Keynote look-alike) <http://blog.hartwork.org/?p=435>



Torino: <http://blog.barisione.org/2007-09/torino-a-pretty-theme-for-latex-beamer/>

OTHER THEMES FROM THE WEB (CONT.)



Wuerzburg: <http://www.cgogolin.de/Computer.html>



Blackboard: github.com/kmaed/kmbeamer/archive/master.zip



MoreBlue: github.com/hayamiz/beamerMoreBlue/archive/master.zip

These slides: mtheme <https://github.com/matze/mtheme>

‘HIDDEN TRACK’: OVERSIZED POSTERS

CREATING OVERSIZED ACADEMIC POSTERS WITH \LaTeX

- Many classes to use, no clear-cut ‘winner’
- But **beamerposter** seems to be slightly more popular
- Themes available from the Internet
 - Each may have slightly different ways to use
 - Best work from the accompanying sample code

CREATING A beamerposter WITH LLT-poster THEME

```
\documentclass{beamer}
% Adjust size, orientation per organiser instructions; Use
scale to get larger font sizes
\usepackage[size=a1,orientation=portrait,scale=1.8]{beamerposter}
\usepackage{LLT-poster}
\usecolortheme{ComingClean}
% Alternative colour themes: ConspicuousCreep; Entrepreneur

% (Only for this theme) The 'short' author name is 'hijacked'
for the e-mail
\author[liantze@gmail.com]{Lim Lian Tze}
\title{Yet Another Beamer Poster Theme}
\institute{Multimedia University, Malaysia}

% (Only for this theme) You can put a graphics in the lower
right hand corner
\footimage{\includegraphics[height=15cm]{liantze}\hspace*{2em}}
```

(CONT.)

```
\begin{document}
\begin{frame}\centering

\begin{columns}[T]
\begin{column}{.46\textwidth}

\begin{block}{Column 1, Block 1}
...
\end{block}

\begin{block}{Column 1, Block 2}
...
\end{block}
\end{column}
\end{columns}
\end{frame}
```

```
\begin{column}{.46\textwidth}

\begin{block}{Column 2, Block 1}
...
\end{block}

\begin{block}{Column 2, Block 2}
...
\end{block}
\end{column}
\end{document}
```

Download from <http://goo.gl/gjjjq0>

SAMPLE OUTPUT

Yet Another Beamer Poster Theme

Column 1, Block 1

- ▶ One, two, pick up my shoe
- ▶ Three, four, shut the door
- ▶ Five, six, pick up sticks
- ▶ Seven, eight, lay them straight
- ▶ Nine, ten, a big fat hen

Column 1, Block 2

- ▶ One, two, pick up my shoe
- ▶ Three, four, shut the door
- ▶ Five, six, pick up sticks
- ▶ Seven, eight, lay them straight
- ▶ Nine, ten, a big fat hen

Column 2, Block 1

- ▶ Some maths material

$$A = U \times S \times V^T \quad (1)$$
$$\sigma = \frac{x \times y}{\sqrt{a + b}} \quad (2)$$

Column 2, Block 2

- ▶ Some maths material

$$A = U \times S \times V^T \quad (3)$$
$$\sigma = \frac{x \times y}{\sqrt{a + b}} \quad (4)$$



Lim Lian Tze
lliantze@gmail.com
Multimedia University, Malaysia

Coming Clean colour theme

SAMPLE OUTPUT (CONT.)

Yet Another Beamer Poster Theme

This is a sample

- ▶ One, two, pick up my shoe
- ▶ Three, four, shut the door
- ▶ Five, six, pick up sticks
- ▶ Seven, eight, lay them straight
- ▶ Nine, ten, a big fat hen

This is another sample

- ▶ Some maths material

$$A = U \times S \times V^T \quad (1)$$
$$\sigma = \frac{x \times y}{\sqrt{a + b}} \quad (2)$$



Lim Lian Tze
lianzt@gmail.com
University of Malaya

alternative Entrepreneur colour theme

SAMPLE OUTPUT (CONT.)

Yet Another Beamer Poster Theme

Column 1, Block 1

- ▶ One, two, pick up my shoe
- ▶ Three, four, shut the door
- ▶ Five, six, pick up sticks
- ▶ Seven, eight, lay them straight
- ▶ Nine, ten, a big fat hen

Column 1, Block 2

- ▶ One, two, pick up my shoe
- ▶ Three, four, shut the door
- ▶ Five, six, pick up sticks
- ▶ Seven, eight, lay them straight
- ▶ Nine, ten, a big fat hen

Column 2, Block 1

- ▶ Some maths material

$$A = U \times S \times V^T \quad (1)$$
$$\sigma = \frac{x \times y}{\sqrt[3]{a + b}} \quad (2)$$

Column 2, Block 2

- ▶ Some maths material

$$A = U \times S \times V^T \quad (3)$$
$$\sigma = \frac{x \times y}{\sqrt[3]{a + b}} \quad (4)$$

Lim Lian Tze
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Multimedia University, Malaysia



landscape and alternative ConspicuousCreep colour theme

OTHER THEMES FROM THE NET

SURF-Face: Face Recognition Under Viewpoint Consistency Constraints, RWTH AACHEN UNIVERSITY

Philippe Dreise, Pascal Frossard, and Jean-Marc Odobez
Visual Language Technology and Pattern Recognition, RWTH Aachen University, Aachen, Germany

Introduction

- Most face recognition approaches are sensitive to registration errors
 - 3D registration is often required
 - 3D registration is time consuming
 - 3D registration requires estimation of local features
 - 3D registration is often slow
 - block-based matching is often slower than dense registration errors

Feature Extraction

- Interest point based feature extraction
 - SIFT or SURF interest point detection
 - SURF is faster than SIFT
 - SURF is more robust to viewpoint variations
 - SURF is more robust to illumination changes
 - leads to a **Face Description**

Feature Description

- Scale Invariant Feature Transform (SIFT)
 - 10-dimensional descriptor, histogram of gradients, scale invariant
 - Multi-scale feature extraction
 - Multi-dimensional descriptor, histogram of gradients, scale invariant
 - Multi-scale feature extraction, multi-dimensional descriptor, scale invariant
 - rotation invariant spatial pyramid version 3.0-SIFT
 - 3D-SIFT
- Gold Standard Features extraction
 - rotation invariant
 - rotation invariant
 - rotation invariant
 - leads to a **Face Description**

Feature Matching

- Euclidean Distance Matching
 - nearest neighbor matching
 - nearest neighbor matching of interest points in a test image \mathbf{B} are compared to all descriptors in a database image \mathbf{A} . By the definition of Euclidean distance, $d(\mathbf{a}, \mathbf{b}) = \sqrt{\sum_{i=1}^n (\mathbf{a}_i - \mathbf{b}_i)^2}$
- additionally, a vote constraint is applied if $d(\mathbf{a}_i, \mathbf{b}_i) < \epsilon$
- Euclidean Matching Constraints
 - nearest neighbor matching
 - grid-based matching, absolute linear constraints
 - nearest neighbor matching, absolute linear constraints
 - nearest neighbor matching, absolute linear constraints, matching
 - Parzen Window Matching
 - nearest neighbor matching
 - nearest neighbor matching, matching constraints, matching
 - Parzen Window Matching
 - RANSAC-based system combination

Matching: Examples for the AIFI Face and CUBIC3D Database

<http://www.vlt.rwth-aachen.de/research/faces/index.html> <http://www.vlt.rwth-aachen.de/research/faces/index.html>

<http://goo.gl/G1C1A>

Using Spectrum-based Fault Localization for Test Case Grouping, Martin Wiegert, Gordon Fraser, and Frank Milius
Institute for Software Technology - Graz University of Technology

Faults

Automated model-based fault localization can often be the generation of arbitrary variations of different test cases. All model-based fault localization tools can generate many test cases for the same specification (see table), which the test engineer needs to analyze becomes a tedious and time consuming task.

Tool	Test Cases	Run Time	Memory	Network
A	Open Source	0.042	452 MB	1
B	Commercial	0.048	1.2 GB	1
C	Open Source	0.048	212	487

Group Test Cases such that all cases of one group truly detect the same failure.

Our Approach

We use spectrum-based fault localization (SFL, e.g., see [2]) on the level of the specification. SFL validates the fault likelihood for each blocks of the specification. Then we compare the failing behavior (test case w.r.t. these blocks). In Model with a higher fault likelihood have a higher impact on the anomaly of test cases.

Model Coverage

Similarity Values

Test Case Grouping

Some Results

Source References

- [2] Horwitz, P., Jonssonius, S., & van Gemert, J. "On the accuracy of spectrum-based fault localization." *Proceedings of the 2009 International Conference on Software Engineering*, pp. 101-110. Springer Berlin Heidelberg, Berlin, Heidelberg, 2009.
- [3] Hamberg, B., Schultebeck, U., Carvalho, A., Johnson, T., Horwitz, P., Sudhir, M., Huddart, E., & van Gemert, J. "Spectrum-based fault localization for distributed systems." *Software Testing Verification and Reliability* 20, no. 1 (2010): 1-20.
- [4] K. Acharya, B. Pradit, M. Singhude, and F. Milius. "Parallel performance testing: A SP approach: An automated methodology for fault analysis," in *Int'l Conf. on Software Engineering and Applications (ICSEA)*, 2009, pp. 1-6.

<http://www.ist.tugraz.at/research/testcasegrouping/index.html> <http://www.ist.tugraz.at/research/testcasegrouping/index.html>

<http://goo.gl/Pkd06>

More may be found from the Net

