

# L<sup>A</sup>T<sub>E</sub>X: More Than Just Academic Papers and Theses

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Malaysian Open Source Conference 2011



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- 1 What are  $\text{\TeX}$ ,  $\text{\LaTeX}$  and Friends?
- 2 Document Types
- 3 Special Material
- 4 Wrapping Up

# Contents

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**1** What are  $\text{\TeX}$ ,  $\text{\LaTeX}$  and Friends?

2 Document Types

3 Special Material

4 Wrapping Up

# What are $\TeX$ and $\LaTeX$ , and Friends?

- $\TeX$ 
  - ASCII TeX, `/tex/`, `/tek/`
  - A **computer typesetting system** created by Donald Knuth
  - for ‘the creation of beautiful books’

# What are T<sub>E</sub>X and L<sup>A</sup>T<sub>E</sub>X, and Friends?

L<sup>A</sup>T<sub>E</sub>X

- ASCII LaTeX, /'leitex/, /'leitɛk/, /'la:tɛx/, /'la:tɛk/
- A **document preparation system** by Leslie Lamport

# What are $\TeX$ and $\LaTeX$ , and Friends?

- Binaries
- $\varepsilon\text{-}\TeX$ : additional primitives to  $\TeX$
  - $\text{pdf}\TeX$ : additional PDF-related primitives
  - $\text{Xe}\TeX$ : native UTF-8 input; can access system fonts
  - $\text{Lua}\TeX$ : includes the Lua scripting engine

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# What are T<sub>E</sub>X and L<sup>A</sup>T<sub>E</sub>X, and Friends?

- Friends
- B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>, *MakeIndex*, METAFONT, METAPOST, ...
  - [http://www.ctan.org/what\\_is\\_tex.html](http://www.ctan.org/what_is_tex.html)



# Why?

From [http://www.ctan.org/what\\_is\\_tex.html](http://www.ctan.org/what_is_tex.html)

## Output Quality

- It has the best output.
- It knows typesetting.

## Freedom

- It's free.
- It runs anywhere.

## Superior Engineering

- It's fast.
- It's stable.
- It's not rigid (extensible).
- Plain text input.
- Many output types.

## Popularity

- It's the standard (in academia and science).

# Where Would I Want to Use $\text{\LaTeX}$ ?

- Documents with complex structures
- Lots of mathematics

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- Documents with complex structures
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# Where Would I Want to Use $\text{\LaTeX}$ ?

- Documents with complex structures
- Lots of mathematics (or other specific needs)
- When publishers **require** them
- Batch processing
- Back-end of other applications

# How Do I Use It?

---

- 1 Write a plain text  $\LaTeX$  file (.tex)

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- 1 Write a plain text  $\LaTeX$  file (`.tex`)
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(or `latex + dvips + ps2pdf` for DVI + PS + PDF)



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- 3 Run `bibtex` and/or `makeindex` to process bibliographies, indices
- 4 Re-run `pdflatex` to resolve references and pointers

# Example .tex File

```
\documentclass[a4paper,11pt]{article}
\author{Lim Lian Tze}
\title{An Introductory Paper}
\date{\today}
\usepackage[english]{babel}

\begin{document}
\maketitle
\tableofcontents

\begin{abstract}
This paper introduces\ldots
\end{abstract}

\section{Introduction}
We consider\ldots

\section{State of the Art}
We look at\ldots

\subsection{Document Formats}
There are many\ldots
\end{document}
```

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pdflatex

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\end{document}

```

pdflatex

An Introductory Paper

Lim Lian Tze  
June 7, 2011

**Contents**

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| <b>2</b> | <b>State of the Art</b> | <b>1</b> |
| 2.1      | Document Formats .....  | 1        |

**Abstract**

This paper introduces...

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We consider...

**2 State of the Art**

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There are many...

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# Example .tex File

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\documentclass[a4paper,11pt]{article}
\author{Lim Lian Tze}
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```

pdflatex

An Introductory Paper

Lim Lian Tze

7. Juni 2011

**Inhaltsverzeichnis**

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| <b>2</b> | <b>State of the Art</b>    | <b>1</b> |
| 2.1      | Document Formats . . . . . | 1        |

**Zusammenfassung**

This paper introduces...

**1 Introduction**

We consider...

**2 State of the Art**

We look at...

**2.1 Document Formats**

There are many...

1

# Example .tex File

```

\documentclass[a4paper,11pt]{article}
\author{Lim Lian Tze}
\title{An Introductory Paper}
\date{\today}
\usepackage[bahasam]{babel}

\begin{document}
\maketitle
\tableofcontents

\begin{abstract}
This paper introduces\ldots
\end{abstract}

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We consider\ldots

\section{State of the Art}
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\subsection{Document Formats}
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pdflatex

An Introductory Paper

Lim Lian Tze

7 Jun 2011

**Kandungan**

|          |                         |          |
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**Abstrak**

This paper introduces...

**1 Introduction**

We consider...

**2 State of the Art**

We look at...

**2.1 Document Formats**

There are many...

1

# Where Do I Get It?

Windows MiKTeX, TeXLive

Un\*x, GNU/Linux TeXLive

Mac OS X MacTeX (based on TeXLive)

Installation Use your OS' package manager  
(or download manually)



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**LaTeX Packages** Use MiKTeX or TeXLive's package manager

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- Windows** MiKTeX, TeXLive
- Un\*x, GNU/Linux** TeXLive
- Mac OS X** MacTeX (based on TeXLive)
- Installation** Use your OS' package manager  
(or download manually)
- Editors** vi, emacs, Texmaker, TeXworks, ...
- LaTeX Packages** Use MiKTeX or TeXLive's package manager
- Documentation** (TeXLive) \$ texdoc <package name>  
(MiKTeX) \$ mthelp <package name>

# Easy to Learn, Hard to Master

- Customising may not be straightforward (vs word processors)

## Easy to Learn, Hard to Master

- Customising may not be straightforward (vs word processors)
- Intentionally so: Style guidelines should be followed strictly
  - Publisher/organisation provides `document class` or `style` files
  - Use these to take care of formatting and styling, focus on the `content`

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- Fair enough.  
But where do I learn all the stuff the  $\text{T}_{\text{E}}\text{X}$ nicians and  $\text{T}_{\text{E}}\text{X}$ perts do?

# Easy to Learn, Hard to Master

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- Fair enough.  
But where do I learn all the stuff the  $\text{T}_{\text{E}}\text{X}$ nicians and  $\text{T}_{\text{E}}\text{X}$ perts do?
- (There *is* a learning curve)

# Getting Help

- Many free tutorials and e-books on the Web (beware of obsolete ones!)
  - [Getting to Grips with  \$\LaTeX\$](http://www.andy-roberts.net/misc/latex/) . Andy Roberts.  
<http://www.andy-roberts.net/misc/latex/>
  - [\$\LaTeX\$ : Beautiful Typesetting](http://liantze.penguinattack.org/latextypesetting.html). Lim Lian Tze.  
<http://liantze.penguinattack.org/latextypesetting.html>
  - [\$\LaTeX\$  and Friends](http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf). M.R.C. van Dongen.  
<http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf>
  - [The  \$\LaTeX\$  WikiBook](http://en.wikibooks.org/wiki/LaTeX). <http://en.wikibooks.org/wiki/LaTeX>



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<http://www.andy-roberts.net/misc/latex/>
  - [\$\LaTeX\$ : Beautiful Typesetting](#). Lim Lian Tze.  
<http://liantze.penguinattack.org/latex/typesetting.html>
  - [\$\LaTeX\$  and Friends](#). M.R.C. van Dongen.  
<http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf>
  - [The  \$\LaTeX\$  WikiBook](#). <http://en.wikibooks.org/wiki/LaTeX>
- Questions?
  - $\TeX$  FAQ. <http://www.tex.ac.uk/cgi-bin/texfaq2html>
  - $\TeX$ .SX. <http://tex.stackexchange.com/>
  - `comp.text.tex` usenet group
  - Malaysian  $\LaTeX$  User Group. <http://latex-my.blogspot.com/>

# Getting Help

- Many free tutorials and e-books on the Web (beware of obsolete ones!)
  - [Getting to Grips with L<sup>A</sup>T<sub>E</sub>X](#). Andy Roberts.  
<http://www.andy-roberts.net/misc/latex/>
  - [L<sup>A</sup>T<sub>E</sub>X: Beautiful Typesetting](#). Lim Lian Tze.  
<http://liantze.penguinattack.org/latex/typesetting.html>
  - [L<sup>A</sup>T<sub>E</sub>X and Friends](#). M.R.C. van Dongen.  
<http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf>
  - [The L<sup>A</sup>T<sub>E</sub>X WikiBook](#). <http://en.wikibooks.org/wiki/LaTeX>
- Questions?
  - T<sub>E</sub>X FAQ. <http://www.tex.ac.uk/cgi-bin/texfaq2html>
  - T<sub>E</sub>X.SX. <http://tex.stackexchange.com/>
  - comp.text.tex usenet group
  - Malaysian L<sup>A</sup>T<sub>E</sub>X User Group. <http://latex-my.blogspot.com/>
- Arrange for training

# So, What Can $\text{\LaTeX}$ Do?

# Contents

---

1 What are  $\TeX$ ,  $\LaTeX$  and Friends?

2 Document Types

3 Special Material

4 Wrapping Up

# Basic Types

## Books

```
\documentclass{book}
\author{...}
\title{...}

\begin{document}
\maketitle
\chapter{...}
\section{...}
...
\subsection{...}
\end{document}
```

### A Wonderful Book

A. Dancy

3rd June 2011

4

#### CHAPTER 1. HEADING ON LEVEL 1 (CHAPTER)

This text and some content like *offensive graphics*. Right. There must  
 a *head* text like this gives you information about the selected text, how the  
 letters are written and the impression of the book. This text should contain  
 all letters of the alphabet and it should be written in all the original language.  
 There is no need for a special content, but the length of words should match  
 to the language.

##### Heading on level 2 (subsection)

Right, here is some text without a meaning. This text should show, how a  
 general text will look like at this place. If you read this text, you will get an  
 information. Right? Is there an information? Is there a difference between  
 this text and some content like *offensive graphics*. Right. There must  
 a *head* text like this gives you information about the selected text, how the  
 letters are written and the impression of the book. This text should contain  
 all letters of the alphabet and it should be written in all the original language.  
 There is no need for a special content, but the length of words should match  
 to the language.

Heading on level 4 (paragraph) Right, here is some text without a  
 meaning. This text should show, how a general text will look like at this  
 place. If you read this text, you will get an information. Right? Is there  
 an information? Is there a difference between this text and some content  
 like *offensive graphics*. Right. There must a *head* text like this gives  
 you information about the selected text, how the letters are written and the  
 impression of the book. This text should contain all letters of the alphabet  
 and it should be written in all the original language. There is no need for a  
 special content, but the length of words should match to the language.

#### 1.2 Lists

##### 1.2.1 Example for list (Roman)

- First item in a list
- Second item in a list
- Third item in a list
- Fourth item in a list
- Fifth item in a list

### Chapter 1

#### Heading on level 0 (chapter)

Right, here is some text without a meaning. This text should show, how a  
 general text will look like at this place. If you read this text, you will get an  
 information. Right? Is there an information? Is there a difference between  
 this text and some content like *offensive graphics*. Right. There must  
 a *head* text like this gives you information about the selected text, how the  
 letters are written and the impression of the book. This text should contain  
 all letters of the alphabet and it should be written in all the original language.  
 There is no need for a special content, but the length of words should match  
 to the language.

##### 1.1 Heading on level 1 (section)

Right, here is some text without a meaning. This text should show, how a  
 general text will look like at this place. If you read this text, you will get an  
 information. Right? Is there an information? Is there a difference between  
 this text and some content like *offensive graphics*. Right. There must  
 a *head* text like this gives you information about the selected text, how the  
 letters are written and the impression of the book. This text should contain  
 all letters of the alphabet and it should be written in all the original language.  
 There is no need for a special content, but the length of words should match  
 to the language.

##### 1.1.1 Heading on level 2 (subsection)

Right, here is some text without a meaning. This text should show, how a  
 general text will look like at this place. If you read this text, you will get an  
 information. Right? Is there an information? Is there a difference between

5

6

#### 1.2 LISTS

##### Example for list (Roman)

- First item in a list
  - (a) First item in a list
  - First item in a list
    - First item in a list
    - Second item in a list
  - Second item in a list
- Second item in a list

##### 1.2.2 Example for list (Roman)

1. First item in a list
2. Second item in a list
3. Third item in a list
4. Fourth item in a list
5. Fifth item in a list

##### Example for list (Arabic)

1. First item in a list
  - (a) First item in a list
    - First item in a list
    - First item in a list
    - Second item in a list
  - (b) Second item in a list
2. Second item in a list

# Basic Types (cont'd)

## Articles

```

\documentclass{article}
\author{...}
\title{...}

\begin{document}
\maketitle
\section{...}
...
\subsection{...}
\end{document}

```

### A Wonderful Book

A. Dancy

3rd June 2011

#### 1 Heading on level 1 (section)

Hi! Here is some text without a meaning. This text should show how a printed text will look like on this place. If you read this text, you will get an information. Really? Is there an information? Is there a difference between the text and some meaning like "theater performance" right? There wasn't! A kind text like this gives you information about the selected text, how the letters are written and the appearance of the text. This text should contain all letters of the alphabet and it should be written in all the original language. There is a special content, but the length of words should match to the language.

#### 1.1 Heading on level 2 (subsection)

Hi! Here is some text without a meaning. This text should show how a printed text will look like on this place. If you read this text, you will get an information. Really? Is there an information? Is there a difference between the text and some meaning like "theater performance" right? There wasn't! A kind text like this gives you information about the selected text, how the letters are written and the appearance of the text. This text should contain all letters of the alphabet and it should be written in all the original language. There is a special content, but the length of words should match to the language.

#### 1.1.1 Heading on level 3 (subsubsection)

Hi! Here is some text without a meaning. This text should show how a printed text will look like on this place. If you read this text, you will get an information. Really? Is there an information? Is there a difference between the text and some meaning like "theater performance" right? There wasn't!

1

A kind text like this gives you information about the selected text, how the letters are written and the appearance of the text. This text should contain all letters of the alphabet and it should be written in all the original language. There is a special content, but the length of words should match to the language.

**Heading on level 4 (paragraph)** Hi! Here is some text without a meaning. This text should show how a printed text will look like on this place. If you read this text, you will get an information. Really? Is there an information? Is there a difference between the text and some meaning like "theater performance" right? There wasn't! A kind text like this gives you information about the selected text, how the letters are written and the appearance of the text. This text should contain all letters of the alphabet and it should be written in all the original language. There is a special content, but the length of words should match to the language.

## 2 Lists

### 2.1 Example for list (ordered)

- First item in a list
- Second item in a list
- Third item in a list
- Fourth item in a list
- Fifth item in a list

### 2.1.1 Example for list (2-items)

- First item in a list
  - First item in a list
  - Second item in a list
- Second item in a list

2

Second item in a list  
 Second item in a list  
 Second item in a list

### 2.2 Example for list (unnumbered)

1. First item in a list
2. Second item in a list
3. Third item in a list
4. Fourth item in a list
5. Fifth item in a list

### 2.2.1 Example for list (2-items)

1. First item in a list
  - (a) First item in a list
    1. First item in a list
    2. Second item in a list
  - (b) Second item in a list
2. Second item in a list

### 2.3 Example for list (description)

First item in a list  
 Second item in a list  
 Third item in a list  
 Fourth item in a list  
 Fifth item in a list

### 2.3.1 Example for list (2-items)

First item in a list  
 First item in a list  
 First item in a list

3



## Some Goodies

---

- Quick [language-switching](#) with babel



## Some Goodies

- Automatic generation of cross-referencing labels:

```
\section{Introduction}\label{sec:intro}
```

```
... We saw in section \ref{sec:intro}...
```

# Some Goodies

- Automatic generation of lists:

`\tableofcontents`, `\listoffigures`, `\listoftables`

## Some Goodies

- Automatic generation of **bibliographies** and **indices**:  
`\cite{Knuth:1976}... \bibliography{references.bib}`  
`...the Linux kernel \index{Linux!kernel}... \printindex`

## Some Goodies

- Fully [hyperlinked](#) PDF with bookmarks: `\usepackage{hyperref}`

# Some Goodies

- Inclusion of selected pages from other PDFs (while inserting new page headers/footers!)

```
\usepackage{pdfpages}
```

```
\includepdf[pages={1,3-5,8},pagecommand=\thispagestyle{plain}]{file.pdf}
```

## University Theses

Universiti Sains Malaysia `\documentclass{usmthesis}`

## WRITING YOUR THESIS WITH LATEX

by

LIM LIAN TZE

Thesis submitted in fulfillment of the requirements  
for the degree of  
Master of Science

December 2007

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CHAPTER 1 - INTRODUCTION: SAMPLES OF BASIC L<sup>A</sup>T<sub>E</sub>X COMMANDS

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## CHAPTER 1

INTRODUCTION: SAMPLES OF BASIC L<sup>A</sup>T<sub>E</sub>X COMMANDS

Help and welcome. After Universiti Sains Malaysia (USM) research progress? The usmthesis package and template files were written in the hope that they may help you prepare your research thesis using L<sup>A</sup>T<sub>E</sub>X based on the Standard Postscript Source (SPS) implementation (SPS, 2007). Please note that this version is based on the new guidelines, to be used by Dec 2007 onwards. (Lang, Cai, Lian and Cai, 2007)

L<sup>A</sup>T<sub>E</sub>X is powerful and produces beautiful documents. However, there is definitely a learning curve to it - one that is worth the effort. If you find any errors in these templates or documents, or have any suggestions or feedback, do e-mail me about it ([liantze@engsci.usm.edu](mailto:liantze@engsci.usm.edu)). The author cannot always guarantee prompt responses, however.

MSL<sup>A</sup>T<sub>E</sub>X, my recommended L<sup>A</sup>T<sub>E</sub>X distribution for Windows, is available on the CDF/CDFCD. A step-by-step installation walkthrough is available at (Lian, 2008).

## 1.1 Some Simple Command Usage

There are plenty of free L<sup>A</sup>T<sub>E</sub>X related online, some of which are listed in the table usmthesis are available at <http://www.usm.edu.my>. This template thesis includes some examples to do some common tasks. We start with some examples for the first (table)

1

## REFERENCES

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# University Theses (cont'd)

## Multimedia University \documentclass{mmuthesis}

THE MMUTHESES L<sup>A</sup>T<sub>E</sub>X DOCUMENT CLASS

BY  
LIM LIAN TZE

B.Sc. (Hons), University of Warwick, United Kingdom  
M.Sc., Universiti Islam Malaysia, Malaysia

THIS IS SUBMITTED IN FULFILMENT OF THE  
REQUIREMENT FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY  
(By Research)

in the  
Faculty of Information Technology

MULTIMEDIA UNIVERSITY  
MALAYSIA  
April 2010

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CHAPTER 1

INTRODUCTION, BACKGROUND, MOTIVATIONS

1.1 First Year and I need a really long title, please do oblige me won't you? Just a few more words and you're there

1.1.1 Second Year

1.2 Third

CHAPTER 2. DESIGN CHAPTER

APPENDIX A. MANUSCRIPT, TECHNICAL SPECIFICATIONS, DOCUMENTATION, EXAMPLES AND ILLUSTRATIONS

APPENDIX B. TSV

REFERENCES

GLOSSARY

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REFERENCES

[1] Andrew A. Chien. Word sense disambiguation via a syntactic study. In *Proceedings of the 1999 Conference on Computational Linguistics and Text Processing*, pages 496-503. Citeseer, September 1999.

[2] Robert J. D. Moore. *Building WordNet: A Case Study in Large-Scale Knowledge Engineering*. Computational Linguistics, 2002, 28: 45.

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# Highly Configurable Documents

## memoir and KOMA-Script Classes

---

- Sectional headings
- Running headers and footers
- Good font, colour and illustration choices
- <http://latex-my.blogspot.com/search/label/bookdesign>



# Presentation Slides

---

- This presentation was made with  $\LaTeX$ !
- Many possible classes: powerdot, beamer

# Presentation Slides

- This presentation was made with  $\LaTeX$ !
- Many possible classes: powerdot, **beamer**

```

\documentclass{beamer}
\usetheme{Warsaw}

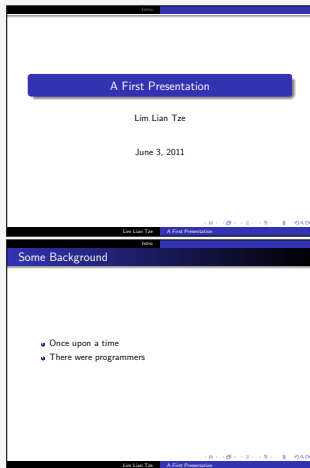
\author ...

\begin{document}
\titleframe

\section{Intro}

\begin{frame}
\frametitle{Some Background}
...
\end{frame}
\end{document}

```



# Presentation Slides

- This presentation was made with  $\LaTeX$ !
- Many possible classes: powerdot, **beamer**

```

\documentclass{beamer}
\usetheme{Szeged}

\author ...

\begin{document}
\titleframe

\section{Intro}

\begin{frame}
\frametitle{Some Background}
...
\end{frame}
\end{document}

```

The image shows two Beamer presentation slides. The top slide is the title slide, featuring the text "A First Presentation", "Lim Lian Tze", and "June 3, 2011". The bottom slide is a content slide titled "Some Background" with two bullet points: "Once upon a time" and "There were programmers". Both slides have a blue header and footer area with navigation icons.

# Presentation Slides

- This presentation was made with  $\LaTeX$ !
- Many possible classes: powerdot, **beamer**

```

\documentclass{beamer}
\usetheme{Bergen}

\author ...

\begin{document}
\titleframe

\section{Intro}

\begin{frame}
\frametitle{Some Background}
...
\end{frame}
\end{document}

```

A First Presentation

Who? Lim Lian Tze  
When? June 3, 2011

Some Background

- Once upon a time
- There were programmers

# Presentation Slides

- This presentation was made with  $\LaTeX$ !
- Many possible classes: powerdot, **beamer**

```

\documentclass{beamer}
\usetheme{oxygen}

\author ...

\begin{document}
\titleframe

\section{Intro}

\begin{frame}
\frametitle{Some Background}
...
\end{frame}
\end{document}

```

The image shows two Beamer presentation slides. The top slide is the title slide, featuring a blue header with a logo and navigation icons. Below the header is an orange bar containing the title "A First Presentation". The main content area is white and contains the author's name "Lim Lian Tze" and the date "June 3, 2011". The bottom slide is a content slide, also with a blue header and navigation icons. The main content area is white and contains the section title "Some Background" followed by a bulleted list: "Once upon a time" and "There were programmers". Both slides have a footer with the text "Lim Lian Tze — A First Presentation" and a page number "22".

## Oversized Posters

---

- Many possible solutions: scipooster, flowfram, beamerposter



# Oversized Posters

- Many possible solutions: sciposter, flowfram, **beamerposter**

```

\documentclass{beamer}
\usepackage[orientation=portrait,
↔ size=a0]{beamerposter}
\usetheme{...}
\author ... % Meta-information

\begin{document}
\begin{frame}
... % Poster contents goes here
\end{frame}
\end{document}

```

### Low-Cost Construction of a Multilingual Lexicon from Bilingual Lists

**Introduction**

- Bilingual MTAs are good resources for building multilingual lexicons, but heterogeneous structures
- Lowest common denominator: list of source language item → target language item(s)
- Proposal: Multilingual lexicon construction using only simple bilingual lists

**One-time Inverse Consultation [1]**

- Generates a bilingual lexicon for new language pair from existing bilingual lists
- JP-EN, EN-MS, MS-EN lexicons → JP-MS

score('tara') =  $2 \times \frac{|E \cap J|}{|E| + |J|} = 2 \times \frac{2}{3+4} = 0.57$   
 $\therefore$  "ip" → "tara" is most likely valid

**Merging Translation Triples into Sets**

- (Example: Malay-English-Chinese)
- Retain OTC 'middle' language links
- For each 'head' language  $i$ , discard triples with score  $< \alpha X$  or score  $< \beta X$ , where  $X = \max$  score of all triples containing that  $i$

- Merge all triples with common bilingual pairs

**References**

[1] J. Rind and K. Ogura. "Combining linguistic resources to create a machine-traceable Japanese-Malay dictionary". In: *Language Resources and Evaluation* 42 (2008), pp. 327-336.

**Adding a New Language**

- (Example: Malay-English-Chinese + French)
- Construct also French-English-Malay triples
- Add French members to existing M-E-C clusters with common English & Malay members

**Precision of 100 Random Translation Sets**

- Precision generally around 0.70-0.82; max 0.86

**F1 and Rand Index of Selected Translation Sets**

- Evaluating accuracy of sets with polysemous 'middle' language members, e.g. 'plant', 'target'

| Test word | Rand Index | F1    | Best accuracy when word | max   | min | alpha | beta |
|-----------|------------|-------|-------------------------|-------|-----|-------|------|
| 'task'    | 0.617      | 0.611 | 0.588                   | 0.632 | 0.6 | 0.4   |      |
| 'plant'   | 0.818      | 0.827 | 0.800                   | 0.933 | 0.6 | 0.2   |      |
| 'target'  | 0.821      | 1.000 | 0.982                   | 1.000 | 0.4 | 0.2   |      |
| 'tutor'   | 0.708      | 0.818 | 0.728                   | 0.792 | 0.8 | 0.2   |      |

**Discussion and Conclusion**

- Low thresholds ( $\alpha, \beta$ ): more coverage, low precision
- High thresholds: good precision, low coverage
- $\alpha = 0.6, \beta = 0.2$  given good trade-off between coverage, precision and recall
- Results are encouraging for such simple input data!
- Future plans: Integrate lexicon into an MT system with WSD

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 llim@infpmall.com, ranaivo@comp.cuhk.edu.hk, tang@infpmall.com  
 Faculty of Information Technology, Multimedia University, Malaysia

LIM Lian Tze | MOSC 2011

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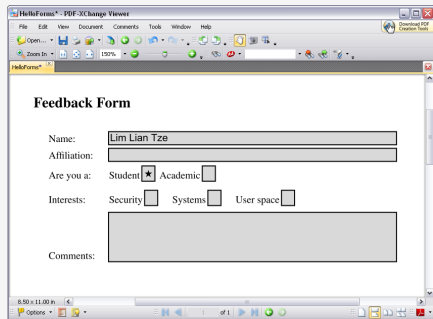


# Fillable PDF Forms

```

\usepackage{hyperref}
... % various settings skipped
\TextField{Name:}
\TextField{Affiliation:}
\ChoiceMenu[radio=true]
{Are you a:}{Student, Academic}
Interest:
\CheckBox{Security}
\CheckBox{Systems}
\CheckBox{User space}
\TextField[multiline=true]
{Comments:}

```



## Fillable PDF Forms (cont'd)

### Use with caution!

- poppler-based viewers (evince, xpdf, okular)
  - Problem displaying and saving radio/check boxes correctly
  - Saved forms can't be opened by other viewers
- Adobe Reader
  - Cannot save filled form as PDF unless Acrobat is installed
  - Only as field-and-value text file
  - Can provide “Submit” button for submission to a URL
  - Or print hard copy of filled form!
- PDF XChange Viewer
  - Best freeware for filling and saving  $\text{\LaTeX}$ -created forms
  - Windows only
  - Not OSS

# Flash Cards

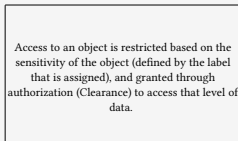
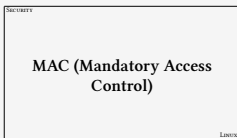
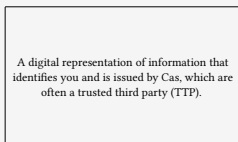
```

\documentclass[avery5388,frame]
{flashcards}
\cardfrontstyle{headings}
\cardfrontfoot{Linux}

\begin{document}
\begin{flashcard}[Security]
{Certificate}
...
\end{flashcard}

\begin{flashcard}[Security]
{MAC ...}
...
\end{flashcard}
\end{document}

```



# Examination Questions

```

\documentclass{exam}
...
\begin{questions}
\question[5]
What is Paul McCartney's middle name?
\begin{oneparchoices}
\choice John \CorrectChoice Paul
\choice Ringo \choice James
\end{oneparchoices}

\question[10] What was the Beatles' first
↪ single in 1962?
\begin{solution}Love Me Do\end{solution}

\question
\begin{parts}
\part[5] What was George's inspiration for
↪ `While My Guitar Gently Weeps'?
\begin{solution}
He opened a random book and saw the words
↪ ``gently weep''.
\end{solution}
...
\end{questions}

```

1. What is Paul McCartney's middle name? (5)  
A. John B. Paul C. Ringo D. James
2. What was the Beatles' first single in 1962? (10)
3. (a) What was George's inspiration for 'While My Guitar Gently Weeps'? (5)  
(b) Who guest-performed for the song and why? (5)

# Examination Questions

```

\documentclass{exam}
...
\begin{questions}\printanswers
\question[5]
What is Paul McCartney's middle name?
\begin{oneparchoices}
\choice John \CorrectChoice Paul
\choice Ringo \choice James
\end{oneparchoices}

\question[10] What was the Beatles' first
↪ single in 1962?
\begin{solution}Love Me Do\end{solution}

\question
\begin{parts}
\part[5] What was George's inspiration for
↪ `While My Guitar Gently Weeps'?
\begin{solution}
He opened a random book and saw the words
↪ ``gently weep''.
\end{solution}
...
\end{questions}

```

1. What is Paul McCartney's middle name? (5)  
A. John B. Paul C. Ringo D. James
2. What was the Beatles' first single in 1962? (10)

**Solution:** Love Me Do

3. (a) What was George's inspiration for 'While My Guitar Gently Weeps'? (5)
- (b) Who guest-performed for the song and why? (5)

**Solution:** He opened a random book and saw the words "gently weep".

**Solution:** Eric Clapton; he wanted a spiffy guitar solo.



# Contents

---

1 What are  $\TeX$ ,  $\LaTeX$  and Friends?

2 Document Types

**3 Special Material**

4 Wrapping Up

# Mathematics

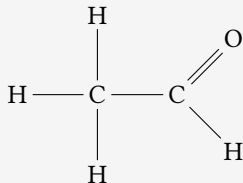
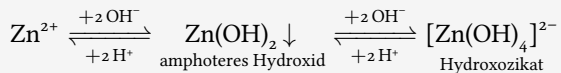
(1) relates the golden ratio and the Fibonacci series.  
Recall that the golden ratio,  $\phi = \frac{1}{2}(1 + \sqrt{5})$ .

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

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

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

# Chemical Equations and Molecules



```
\usepackage[version=3]{mhchem}     % sufficient for chemical equations
```

```
\usepackage{chemfig}             % for 2-D molecule drawings
```

```
...
```

```
\ce{Zn^2+ <=> [\ce{+ 2OH-}][\ce{+ 2H+}]}
```

```
\underset{\text{amphoterer Hydroxid}}{\ce{Zn(OH)2 v}}$
```

```
<=> C[+2OH-][+ 2H+]
```

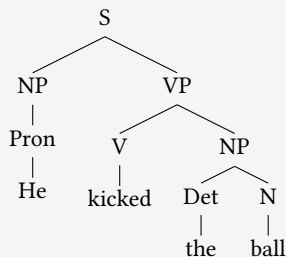
```
\underset{\text{Hydroxozikat}}{\ce{[Zn(OH)4]^2-}}$ }
```

```
\chemfig{H-C(-[2]H)(-[6]H)-C(-[7]H)=[1]O}
```

# Linguistics

(1) %\*Wen  liebt  seine Mutter?  
 Whom loves his  mother  
 'Who does his mother love?'

(2)  [[NP He ] [VP kicked [NP the ball ]]]S



```
\usepackage{linguex,qtrees}
```

```
...
```

```
\exg. \%*Wen  liebt  seine Mutter?\%
```

```
Whom loves his mother\%
```

```
`Who does his mother love?'
```

```
\exi.  [[NP He ] [VP kicked [NP the ball ]]]S
```

```
\Tree [ .S [ .NP [ .Pron He ] ] [ .VP [ .V kicked ] [ .NP [ .Det the ] [ .N ball ] ] ] ] ]
```

# Program Listings

```

\usepackage{listings,xcolor}
...
\begin{lstlisting}
[language=C,columns=fullflexible,
basicstyle=\ttfamily,
keywordstyle=\bfseries\color{red},
commentstyle=\sffamily\color{green},
stringstyle=\rmfamily\color{orange}]
#include <stdio.h>
/*
| Prints "hello world"
*/
int main(void)
{
    printf("hello, world\n");
    return 0;
}
\end{lstlisting}

```

```

#include <stdio.h>

/*
| Prints "hello world"
*/
int main(void)
{
    printf("hello, world\n");
    return 0;
}

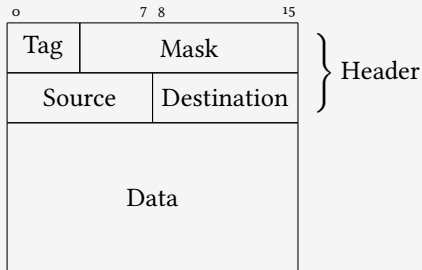
```

# Network Protocols

```

\usepackage{bytefield}
...
\begin{bytefield}{16}
\bitheader{0,7,8,15} \\
\wordgroup{Header}
\bitbox{4}{Tag} & \bitbox{12}{Mask} \\
\bitbox{8}{Source} &
\bitbox{8}{Destination}
\endwordgroup \\
\wordbox{3}{Data}
\end{bytefield}

```



## Life Sciences

*first case (see text)*

|          |       |          |            |      |       |        |     |
|----------|-------|----------|------------|------|-------|--------|-----|
| AQP1.PRO | TLGLL | SCQ      | ISILRAVMYI | IAQ  | CVGAI | VASAIL | 112 |
| AQP2.PRO | TVA   | CLVGCH   | VSFLRAAFYV | AAQL | LGAV  | AGAAIL | 104 |
| AQP3.PRO | TFAM  | CFLAREPW | IKLPIY     | TLAQ | TLGAF | LGAGIV | 112 |
| AQP4.PRO | TVAMV | CTRK     | ISIAKSVFYI | TAQ  | CLGAI | IGAGIL | 133 |
| AQP5.PRO | TLALL | IGNQ     | ISLLRAVYV  | AAQL | VGAI  | AGAGIL | 105 |

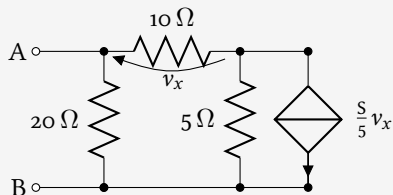
*second case (see text)*

```

\usepackage{texshade} % for nucleotide and peptide alignments
...
\begin{texshade}{AQPpro.MSF}
\shadingmode{similar}
\threshold[80]{50}
\setends{1}{80..112}
\hideconsensus
\feature{top}{1}{93..93}{fill:\downarrow}{first case (see text)}
\feature{bottom}{1}{98..98}{fill:\uparrow}{second case (see text)}
\end{texshade}

```

# Circuits and SI Units



- $3.45 \times 10^4 \text{ V}^2 \text{ lm}^3 \text{ F}^{-1}$
- 40 km/h, 85 km/h and 103 km/h

```

\usepackage{siunitx}
\usepackage[siunitx]{circuitikz}
...
\begin{circuitikz}
\draw (0,0) node[anchor=east] {B}
  to[short, o-*] (1,0)   to[R=20<\ohm>, *-*) (1,2)
  to[R=10<\ohm>, v=$v_x$] (3,2) -- (4,2)
  to[ cI=$\frac{\si{\siemens}}{5} v_x$, *-*) (4,0) -- (3,0)
  to[R=5<\ohm>, *-*) (3,2)
  (3,0) -- (1,0)   (1,2) to[short, -o] (0,2) node[anchor=east]{A}
;\end{circuitikz}

\SI{3.45d4}{\square\volt\cubic\lumen\per\farad}
\SIlist[per-mode=symbol]{40;85;103}{\kilo\metre\per\hour}

```



## Meh, What Good is That? Can't Use it Anywhere Else.

---

Actually, you can.

## Meh, What Good is That? Can't Use it Anywhere Else.

Actually, you can.

```
\usepackage[active,tightpage]{preview}
\PreviewEnvironment{texshade}
...
\begin{texshade}
...
\end{texshade}
```

- Run `pdflatex` → cropped PDF containing *only* contents of `texshade`

## Meh, What Good is That? Can't Use it Anywhere Else.

Actually, you can.

```
\usepackage[active,tightpage]{preview}
\PreviewEnvironment{texshade}
...
\begin{texshade}
...
\end{texshade}
```

- Run `pdflatex` → cropped PDF containing *only* contents of `texshade`
- `gs -otexshade.png -sDEVICE=png16m -r200 -dTextAlphaBits=4 -dGraphicAlphaBits=4 texshade.pdf`

## Meh, What Good is That? Can't Use it Anywhere Else.

Actually, you can.

```
\usepackage[active,tightpage]{preview}
\PreviewEnvironment{texshade}
...
\begin{texshade}
...
\end{texshade}
```

- Run `pdflatex` → cropped PDF containing *only* contents of `texshade`
- `gs -otexshade.png -sDEVICE=png16m -r200 -dTextAlphaBits=4 -dGraphicAlphaBits=4 texshade.pdf`
- Multiple environments → multi-page PDF  
Use `-otexshade%02d.png` to get `texshade01.png`, `texshade02.png`, ...

# Bar Codes

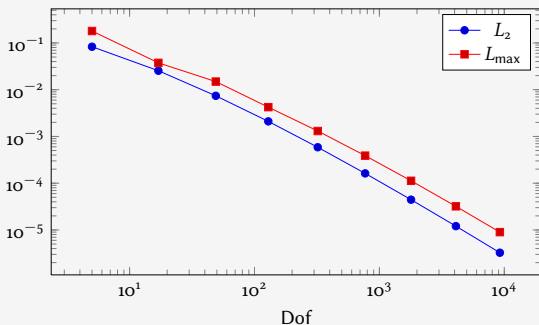


```

\usepackage{auto-pst-pdf} % Needed if running pdflatex; must use option --shell-escape
\usepackage{pstricks,pst-barcode}
...
\begin{pspicture}
\psbarcode{MECARD:N:Malaysia Open Source Conference...}{eclevel=L}{qr}
\psbarcode{9781860742712}{includetext guardwhitespace}{ean13}
\psbarcode{978-3-86541-114}{includetext guardwhitespace}{isbn}
\psbarcode{LE28HS9Z}{includetext}{royalmail}
\psbarcode{^453^178^121^239}{columns=2 rows=10}{pdf417}
\end{pspicture}

```

# Graph Plots



```

\usepackage{pgfplots}
...
\begin{tikzpicture}
\begin{loglogaxis}[xlabel=Dof]
\addplot table[x=dof,y=L2]{datafile.dat}; \addlegendentry{$L_2$};
\addplot table[x=dof,y=Lmax]{datafile.dat}; \addlegendentry{$L_{\text{max}}$};
\end{loglogaxis}
\end{tikzpicture}

```

# Spreadsheets

(Seriously, use a proper spreadsheet application for complex stuff.)

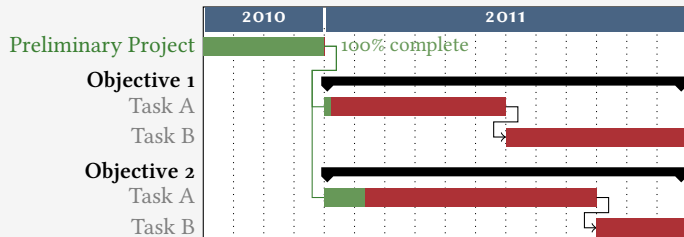
| Year ending Mar 31  | 2009     | 2008     | 2007    |
|---------------------|----------|----------|---------|
| Revenue             | 14580.20 | 11900.40 | 8290.30 |
| Cost of sales       | 6740.20  | 5650.10  | 4524.20 |
| <i>Gross profit</i> | 7840.00  | 6250.30  | 3766.10 |

```

\STautoround*{2}
\begin{spreadtab}{{tabular}{l rrr}}
@Year ending Mar 31 & @2009 & @2008 & @2007\\ \hline
@Revenue & 14580.2 & 11900.4 & 8290.3\\
@Cost of sales & 6740.2 & 5650.1 & 4524.2\\ \cline{2-4}
@\emph{Gross profit} & \STcopy{>}{b2-b3} & & \cline{2-4}
\end{spreadtab}

```

# Gantt Charts



```

\usepackage{pgfgantt}
...
\begin{tikzpicture}
\begin{ganttchart}[...settings...]{16}
\gantttitle{2010}{4} \gantttitle{2011}{12} \\\
\ganttbar[progress=100]{Preliminary Project}{1}{4} \\\
\ganttlink[link mid=.4]{4}{2}{5}{4} \ganttlink[link mid=.159]{4}{2}{5}{7}
\ganttgroup{Objective 1}{5}{16} \\\
\ganttbar[progress=4]{Task A}{5}{10} \\\
\ganttlinkedbar[progress=0]{Task B}{11}{16} \\\
...
\end{ganttchart}
\end{tikzpicture}

```



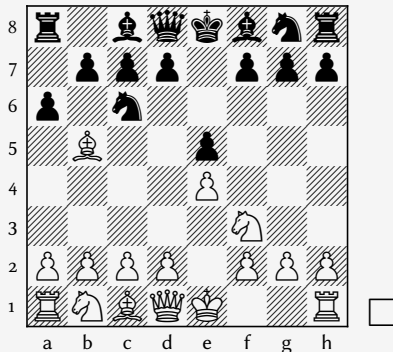
# Chess games

```

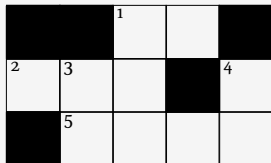
\usepackage[skaknew]{%
{skak, chessboard}
...
\newgame
\mainline{1. e4 e5 2. Nf3 Nc6 3.
↪Bb5 a6}
\chessboard[smallboard]

```

1 e4 e5 2 Nf3 Nc6 3 Bb5 a6



# Crossword Puzzles



**Across:** 1 unit of measure  
2 \* 5 sectioning unit

**Down:** 1  $\eta$  3 unit of  
measure 4 nonproportional  
font

```

\usepackage{cwpuzzle}
...
\begin{Puzzle}{5}{3}
|* |* |[1]E|X |* |.
|[2]A|[3]S|T |* |[4]T|.
|* |[5]P|A |R |T |.
\end{Puzzle}
\begin{PuzzleClues}{
\textbf{Across:} }
  \Clue{1}{EX}{unit of measure}
  \Clue{2}{AST}{\(\ast\)}
  \Clue{5}{PART}{sectioning unit}
\end{PuzzleClues}
\begin{PuzzleClues}{
\textbf{Down:} }
  \Clue{1}{ETA}{\(\eta\)}
  \Clue{3}{SP}{unit of measure}
  \Clue{4}{TT}{nonproportional font}
\end{PuzzleClues}

```

## Song Books with Guitar Tabs



C



G



Am



F

Country road, take me home, to the place I belong.



C



G



F



C

West Virginia, mountain momma, take me home, country road.

```

\usepackage{gchords,guitar}
...
\begin{guitar}
\newcommand{\CMaj}{\chord{t}{n,p3,p2,n,p1,n}{C}}
\newcommand{\Amin}...
Country [\CMaj]road, take me [\GMaj]home, ...
\end{guitar}

```

# Contents

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- 1 What are  $\TeX$ ,  $\LaTeX$  and Friends?
- 2 Document Types
- 3 Special Material
- 4 Wrapping Up**

# Summary

- $\text{\LaTeX}$ 
  - a document preparation system
  - professional quality typesetting output

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- $\text{\LaTeX}$ 
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  - Academic: papers, theses, books
  - Dedicated document types
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# Summary

- $\text{\LaTeX}$ 
  - a document preparation system
  - professional quality typesetting output
- Output artefacts
  - Academic: papers, theses, books
  - Dedicated document types
  - Domain-specific material
- Usage scenario
  - Direct authoring
  - Automatic generation (via scripts etc)
  - As back-end of other applications

# Getting Help

- Many free tutorials and e-books on the Web (beware of obsolete ones!)
  - [Getting to Grips with  \$\LaTeX\$](#) . Andy Roberts.  
<http://www.andy-roberts.net/misc/latex/>
  - [\$\LaTeX\$ : Beautiful Typesetting](#). Lim Lian Tze.  
<http://liantze.penguinattack.org/latextypesetting.html>
  - [\$\LaTeX\$  and Friends](#). M.R.C. van Dongen.  
<http://csweb.ucc.ie/~dongen/LaTeX-and-Friends.pdf>
  - [The  \$\LaTeX\$  WikiBook](#). <http://en.wikibooks.org/wiki/LaTeX>
- Questions?
  - $\TeX$  FAQ. <http://www.tex.ac.uk/cgi-bin/texfaq2html>
  - $\TeX$ .SX. <http://tex.stackexchange.com/>
  - `comp.text.tex` usenet group
  - Malaysian  $\LaTeX$  User Group. <http://latex-my.blogspot.com/>
- Arrange for training



# Thank You

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## Questions?

liantze@gmail.com

<http://latex-my.blogspot.com>