LaTeX for the Vision Lab

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Why not Word?

• Word processors mix two activities
  – Generation and revision of text (words and sentences)
  – Typesetting and formatting
• Authors should concentrate on first task
  – Accomplished in ASCII text + markup
• Especially useful in large or complex docs
  – Complex = figures, tables, references
• Many languages
  – Japanese, Chinese, Hebrew, French, German
• Great support, documentation and help
A little history and terminology

- Donald Knuth (Stanford) 1977
- TeX system for typesetting
- Wanted complete control over appearance of doc, including math
- Device independent output (.dvi)
- Froze development in ~1990
A little history and terminology

- Leslie Lamport (Brandeis, Math PhD) --now @ Microsoft Research
- LaTeX --more macro than TeX
  - Extensible, too extensible
  - Frozen, reorganized as LaTeX2e
- Current developments?
  - www.latex-project.org
\documentclass{article}
\title{The Sternberg paradigm is bogus}
\author{Robert Sekuler}
\date{September 2004}
\begin{document}
\maketitle
Hello world!
\end{document}
Output of Obligatory sample
(sans page number)

The Sternberg paradigm is bogus

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Hello world!
Some basic rules

- Each paragraph must be separated from another by a blank line
- Multiple blank lines treated as one
- Multiple spaces between words are treated as one
- Markup commands begin with \%
- Command options enclosed in {}
- Commands can be nested
Standard Document Classes

- article
- book
- report
- letter
- slides

- All class files have suffix \texttt{.cls}
A Non-Standard Document Class

• apa.cls -- options: doc, man, jou
  • \document

  • Loads required packages
    – for example, apacite, article
  • Sets up appropriate equivalences
    – \def\figurecaptionsname{Figure Captions}
    – \def\notesname{Footnotes}
Partial preamble of sample article

\documentclass[doc]{apa} % doc jou man
\usepackage{amsmath,amssymb}
\usepackage[pdftex]{graphicx}
\usepackage{lineno, xspace}
\usepackage{pdfsync}

\begin{document} -- this is start of doc
Redefining terms in preamble

\documentclass[jou]{apa}
\usepackage.....
\newcommand{\nemo}{\textsf{NEMO}}
\newcommand{\nemoa}{\textsf{NEMO$_1$}}
\newcommand{\nemob}{\textsf{NEMO$_2$}}
\begin{document} -- this is real
start of doc
Other input file types

• **Package files**
  - extension .sty
  - pdfsync, xspace, graphicx, lineo
  - hyperef

• **Bibliographical formatting files**
  - extension .bst
  - apacite.bst

• **Available at www.CTAN.org**
  - Comprehensive TeX Archive Network
Templates: Resuable/Modifiable Code

- Standard (with TeXShop)
- Editing window, Templates tab
- Latex
- Graphics
- Floats (various)
  - Can add APA template
Some output files

- .log -- memory use, errors, etc.
- .toc
- .aux
- .pdfsync
- .dvi
- .bbl
- .pdf
Bibliography

• Enter bib entries directly into doc
  - \begin{thebibliography}
    • items
  - \end{thebibliography}

• Or enter --at place where you want references
  - \bibliography{RP2,yuko}
    • LaTeX finds and uses files RP2.bib and yukobib
Bibliography

• Advantages of second approach
• No reference left behind
• No uncited reference included

• Requires a .bib file
  – BibDesk (current version = 0.95)
  – http://bibdesk.sourceforge.net/
  – import references from hubmed
Using a bib file

@article{MorgWataMcKe00,
    Author = {Morgan, M J and Watamaniuk, S N and McKee, S P},
    Journal = {VisRes},
    Number = {17},
    Pages = {2341–2349},
    Title = {The use of an implicit standard for measuring discrimination thresholds},
    Volume = {40},
    Year = {2000}}
bib entries

• Entry type
  – book, article, phdthesis, inproceedings
• user-chosen citekey -- for use with \cite{citekey} in doc
• fields in curly brackets
  – author
  – journal
  – title
  – abstract (optional)
Using a bib file

- Can also include abstract and URL

\cite\{MorgWataMcKe00\} puts into .pdf

- (Morgan, Watamaniuk & McKee, 2000)

\citeA\{MorgWataMcKe00\} puts into .pdf

- Morgan et al. (2000) said

- \cite\{Nosol92,ClarGron96,HumpEtal89a\}

Issues with caps in book title; symbols (&)
Suggestions for bib file

- Abbreviations can be used for journal names
- Insert at top of .bib file

@STRING(JNPHYS = "Journal of Neurophysiology")
@STRING(JNSCI = "Journal of Neuroscience")
@STRING(VisRes = "Vision Research")
@STRING(NAT = "Nature")
@STRING(BRES = "Brain Research")
@STRING(PNAS = "Proceedings of the National Academy of Sciences")
Order of processing

- Typeset LaTeX to generate list of \cite refs in .aux file
- Typeset BibTeX --coordinates .aux file with .bib file(s), generating a .bbl file (references formatted according to .bst file style)
- Typeset LaTeX again --reads in .bbl file
- Typeset LaTeX again --resolves all references
  - including x-references and hyperefs

\label{fig:mnemometricF}

As Figure \ref{fig:mnemometricF} shows, .....
Collaborative doc prep

- **Scenario:** n people collaborate on some doc
- **No real equivalent to Word’s track change**
- **Options?**
  - Highlight/mark changes in \texttt{.tex} doc
    - BF comments/changes
    - Color code all comments/changes
  - Use package designed to compare two versions of \texttt{.tex} file
  - I’ve not used special package, but highlights works just fine --if you’re conscientious
Installing TeXShop

• TeXShop by Richard Koch @ Oregon
• www.uoregon.edu/~koch/texshop/texshop.html
• Follow instructions carefully
• Use G. Werden’s i-Installer program
• Downloads and puts files into right folders
• Cocoaspell
• Where’s my stuff? Folders to use.