Intro to TEX and LATEX

The Programming Language for Creating Beautiful Documents

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What is TEX and LATEX?

- **TEX** (= tau epsilon chi, and pronounced similar to "blecch", not to the state known for ‘Tex-Mex’ chili) is a computer language designed by Donald Knuth for use in typesetting; in particular, for typesetting math and other technical (from Greek "techne" = art/craft, the stem of ’technology’) material. It was t takes a "plain" text file and converts it into a high-quality document for printing or on-screen viewing.[1] [2]
- **LATEX** is a macro system built on top of TeX that aims to simplify its use and automate many common formatting tasks. It is the de-facto standard for academic journals and books, and provides some of the best typography free software has to offer. [2]

What is TEX/LATEX Used For?

- **Making Documents With Complex Formats**
- **Technical Papers**
  - Research Papers
  - IEEE Documents
- **Literally And Written Medium**
  - Essays
  - Novels
  - Journal Articles
  - Lab Reports
  - Memos
  - Slideshows?
  - And so much more!

What Does TEX Look Like?

- IEEETran (the LATEX format guide that all articles published by IEEE must use)
- Internet of Things for Smart Cities
- Lab Report Example
- Lab Report Example With Code Snippets
- Resume Example
- Documentation Example
- User Manual Example
- Code Documentation
- Tons of More Template to Get You Started

LaTeX vs Word

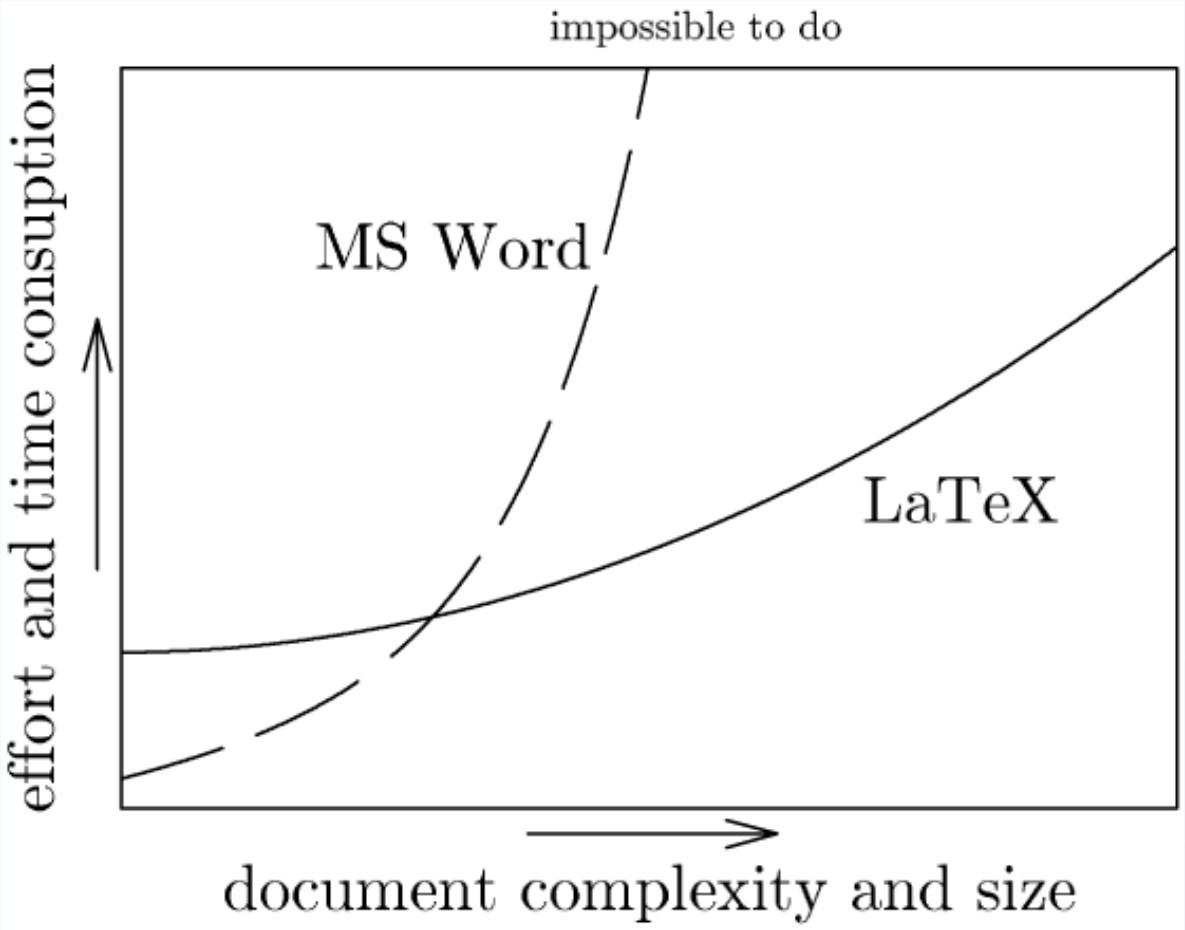

Figure: Effort and Time Comparison: Word vs LaTeX [3]

How to Start Writing TEX Documents

- **Option I: Use Overleaf**
  1. Make a free, personal overleaf account
  2. Make your first TEX project
  3. That's basically it, you can start writing TEX
- **Option II: Write TEX Documents Locally**
  1. **Download a TEX Language Compiler and a TeX Package Manager**
     - Windows: proTeXt
     - MacOS: MacTeX
     - Unix/GNU/Linux: TeX Live
  2. Configure your favorite text editor or IDE to support TEX syntax highlighting, a TEX IDE may already be included in MacTeX and TeX Live)
  3. Compile your TEX and that's it.

Pros and Cons

- **Option I: Use Overleaf**
  - **Pros:**
    1. It's the fastest way to learn how to make documents in a TEX environment
    2. Overleaf has all of the TEX packages you will ever need so you don't have to bother with installing packages
    3. You get access to a plethora of pre-made templates
    4. It's essentially Google Docs for LATEX, you can collaborate with friends on reports
    5. Overleaf has live rendering of your document so you can see what your document looks like as you write TEX code
    6. Overleaf has error checking and basic debugging that is decent
  - **Cons:**
    1. It's a cloud-based service so you have to have an internet connection
    2. You have to upload files that you reference in your TEX, (e.g. images, code snippets)
    3. Some features like collaboration cost a monthly fee

Pros and Cons

- **Option II: Write TEX Documents Locally**
  - **Pros:**
    1. You can write TEX anywhere, no internet required
    2. You can use your favorite text editor
    3. The fastest way to write TEX documents
    4. There are many TEX IDE's that usually bundle a TEX compiler, a TEX package manager, and a text editor
    5. You can reference local files (e.g. images, code) and when you change them, you just have to recompile and all changes are updated in you document
    6. 100% free
  - **Cons:**
    1. Need to download stuff
    2. Have to install TEX packages yourself
    3. Requires a little bit of configuration at first

Where to Get Started

- **Overleaf's LaTeX Tutorials** are excellent
- All of the TeX source to make this presentation, as well as some TeX documents I've created can be found on **GitHub**

Works Cited

- TEX User Group http://tug.org
- WikiBooks:LATEX https://en.wikibooks.org/wiki/LaTeX
- Pintric http://www.pinteric.com/pic/miktex.gif