LaTeX

Adapted from slides and documents by Arthur Delarue

Learning Objectives – LaTeX/Zotero

At the end of the session, students will be able to…

- Organize and format a simple document in LaTeX, including tables, figures, and bibliography
- Add papers to their Zotero library, organize and categorize their papers, link their account to Overleaf, and directly cite their papers in LaTeX

Motivation

TeX

Donald Knuth created TeX to specify all kinds of formatting for documents. Includes algorithms to make documents “beautiful” (kerning, spacing, word breaks).

LaTeX

Leslie Lamport released LaTeX (Lamport’s TeX) which includes macros he built on top of TeX. This makes the writing process more content-focused instead of formatting-focused.

To create a new “Intro” section:

TeX: Specify larger font, bold, space before and after, section numbering convention, etc.

LaTeX: `\section{Introduction}`

Benefits of LaTeX

- Separate content from formatting: type everything in plain text, then easily adjust formatting afterwards
- Easily format a wide range of documents with style templates
- Prettiest and easiest way to type up mathematical notation and formulas
- Helps keep citations and references in a consistent format

Using LaTeX

TeX distributions

- Installed locally on your machine
- Greater control of customization and formatting
- Fewer privacy concerns for sensitive documents

Overleaf

- Available online with no install needed
- Optimized for ease-of-use and a good place to learn
- Allows for easy collaboration, kind of like “Google Docs” for LaTeX

Overleaf Demo

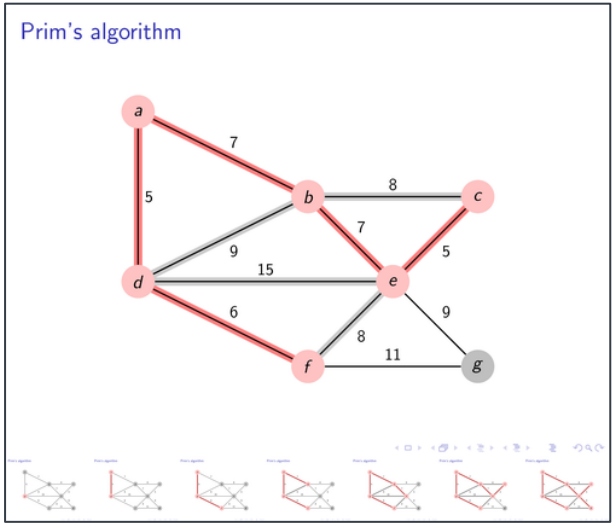
Let’s go!

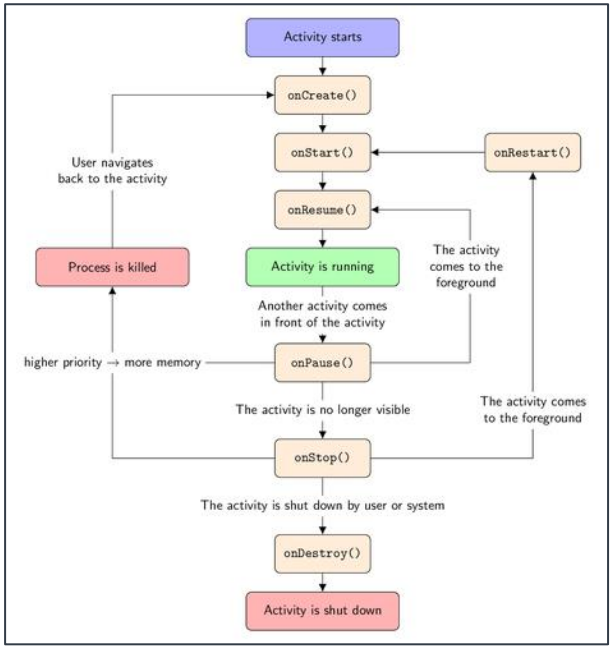
Code along by cloning the class Github repo and navigating to 1_comp_literacy/latexstuff. We will upload all of these files to Overleaf.

View project here: https://www.overleaf.com/read/hhdngkdkkcsm

Figures in TikZ

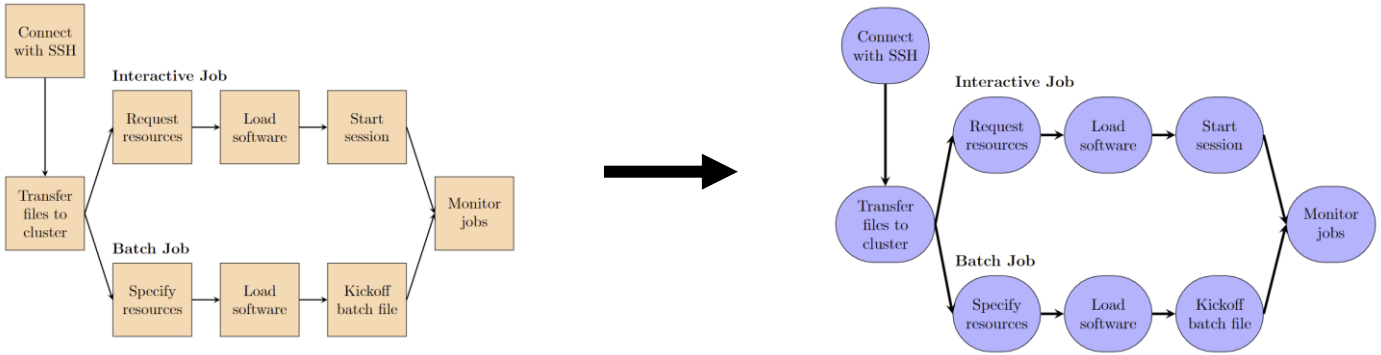
Make paper-ready figures using the TikZ package. Same “modular” formatting principle the rest of LaTeX.





Basic Idea

- Specify style elements (red rounded boxes, thick black arrows, font size 12, etc.)
- Build your figure using the alias of each element (box, arrow, etc.)
- Easily change the formatting for all elements with one command, and TikZ will apply the new style to everything



Check out an example in the homework!

Key Takeaways

- LaTeX allows you to focus on content first, then easily adjust formatting
- Use Google to find commands, packages, and templates
- LaTeX is widely used: if you're doing a tedious task, there may be a simple tool to help if you search! (e.g. generate a large LaTeX table from an Excel table, translate markdown to LaTeX)

Next question: How do I make citing and organizing literature easier?

Zotero

Motivation

- It can be difficult to keep papers organized, both for specific literature reviews and for your general library
- Tools like **Zotero**, Mendeley, EndNote, and PaperPile are easy to use and can save lots of time and frustration

Add papers to library

Automatically capture citation information

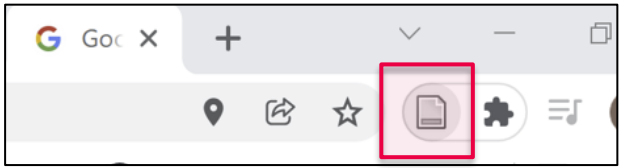
Organize by project, topic, and tags

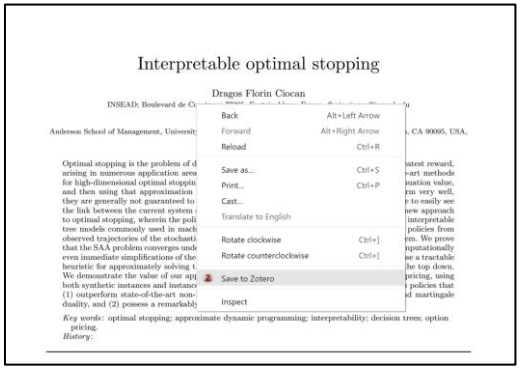
Connect to Overleaf to generate bibliographies

Adding Papers

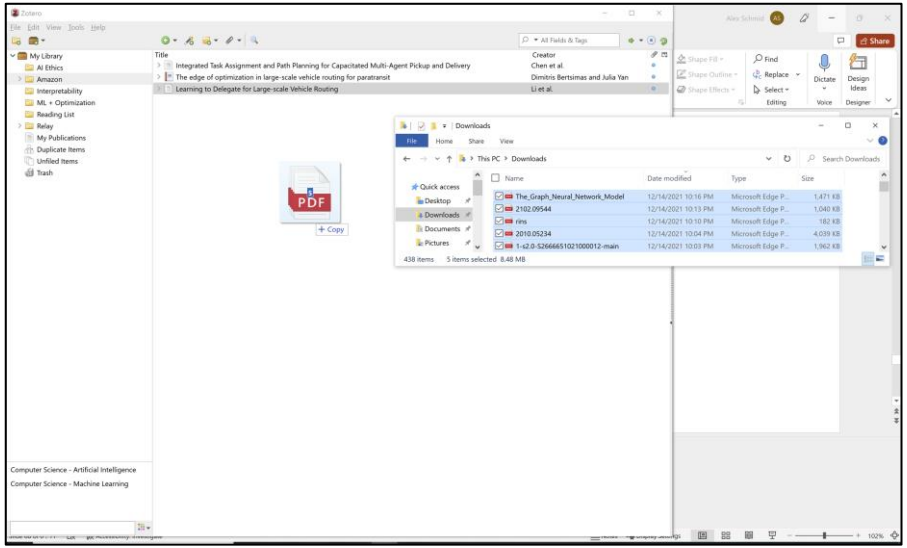
Download: https://www.zotero.org/download/

Add browser connector to add papers with button in search bar or with right click



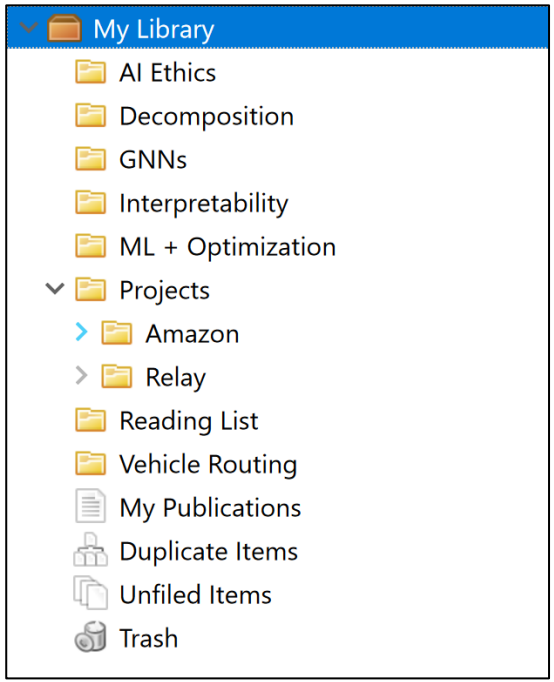


Drag downloaded papers into your Zotero library



Organizing Your Library

Organize papers into folders by topic, project, etc.

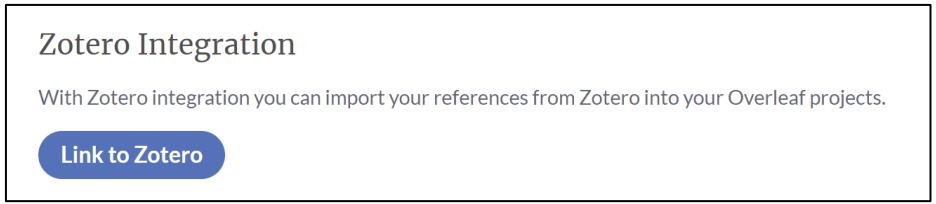


Organization Tips

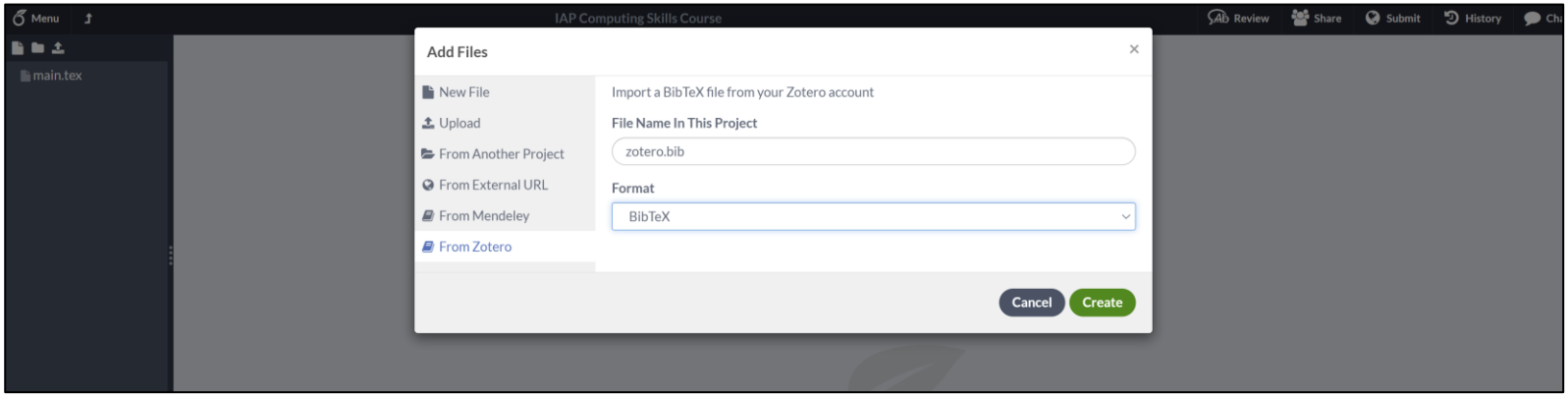
- Keep a “reading list” to separate papers that you have not read yet and prune the list often. If you add lots of random, unread papers, you may end up with a cluttered and difficult to use library.
- Add tags and ensure citations are correct when you first add a paper, otherwise risk doing lots of organizational work later
- Link related papers to help jump start future literature reviews

Connecting to Overleaf

Overleaf > Account > Account Settings > Zotero Integration (or Mendeley)



From your project, Upload > Import a .bib file containing your Zotero library



Reference, reference, reference!

Now that you're **TeX-savvy**™, use your new skills to reference your Zotero papers in LaTeX documents with ease!

More Tips

- To change the reference label used in the Zotero BibTeX file for a paper, add “Citation key: <desired label>” to the “Extra” field of the paper’s Zotero info section.
- Mendeley also offers Overleaf integration, with the additional feature of allowing you to import BibTeX files for specific folders, rather than your entire library.

Wrap-Up

Thank You!

Please let me know if you have any questions or want to discuss further.

Email: aschmid@mit.edu

The follow-up assignment will be released on Canvas after class and is due **January 11th 8pm EST.** It should take ~1 hour.