Research Computing Bootcamp, day 1

Available online: https://bit.ly/2l4ZLIz

Bulat Gafarov

University of California, Davis

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Advantages of LyX

- Freely available on https://www.lyx.org
- As easy as Microsoft Word (much better than the Scientific workplace)
- Don't need to know LaTeX to use it
- Works on Mac, Linux, and Windows
- Supports *macros*
- Convertible into plain TeX (and backwards)
- Built-in version control*

Disadvantages of LyX

- Collaborators need to use LyX as well
- Converted TeX code is sometimes hard to read (especially macros)
- Hard to do more advanced stuff
- Bugs are common

- You are just starting learning TeX
- Use it as an interactive TeX reference
- Doing computation on in the editor

Advantages of Overleaf

- Collaborative LaTeX editor
- Don't need to install, works on mobile devices
- Auto compilation
- Automatic version control
- Easy project management
- Auto-complete functionality
- Easy to work with multiple files
- Dropbox backup

Disadvantages of Overleaf

- Full functionality requires subscription (student discounts are available)
- Requires Internet access

- Work with coauthors
- Use multiple devices for editing
- Find standard version control systems frustrating

Why I like Matlab?

- It is very fast and high level *vectorized* programming language
- It has great integrated development environment which simplifies coding and debugging
- It is handy for other types of numerical analysis (in particular, solving dynamic models in resource economics and macroeconomics)
- A lot of additional toolboxes
- There is a lot of source code available online
- Widely used, compatible with a broad range of numerical solvers
- Updated annually to acquire new features
- Matlab allows code compilation and translation of the code to C++, which you can use as plug-ins for Stata and R

- Solving structural models (great for dynamic programming)
- Numerical optimization (computational equilibrium models)
- Estimation of time series and structural models
- Bayesian estimation
- Monte Carlo simulation analysis of estimators/computational models

Downsides of Matlab

- Basic data cleaning and managements is not user friendly (R or Stata are better for that)
- Used to be tricky to use on supercomputers (there was a restriction on the number of CPUs)
- Not so common for data analysis outside academia (Python or R are more common)
- There is a risk that Matlab may be abandoned in distant future