

Git Your L^AT_EX On!

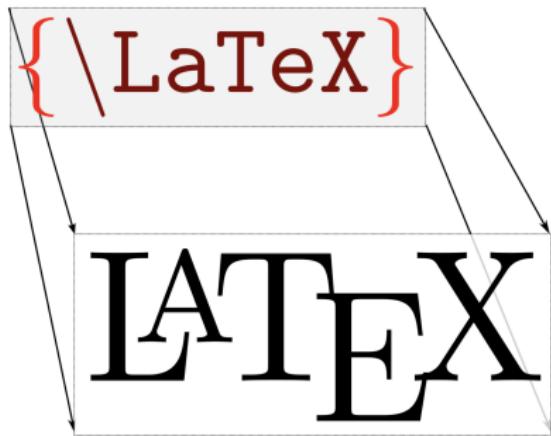
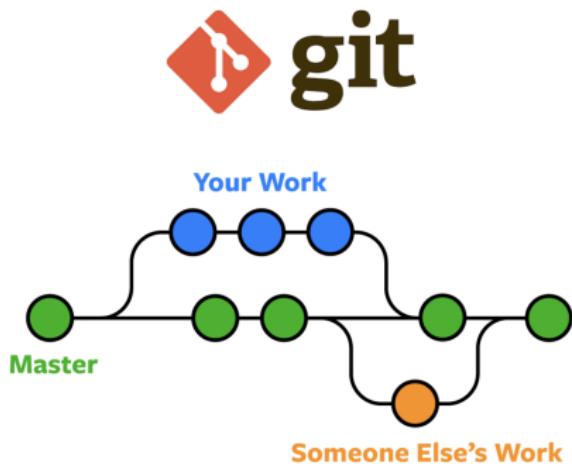
Joseph M. Fedrow



June 26, 2024



WHAT ARE GIT AND LATEX?



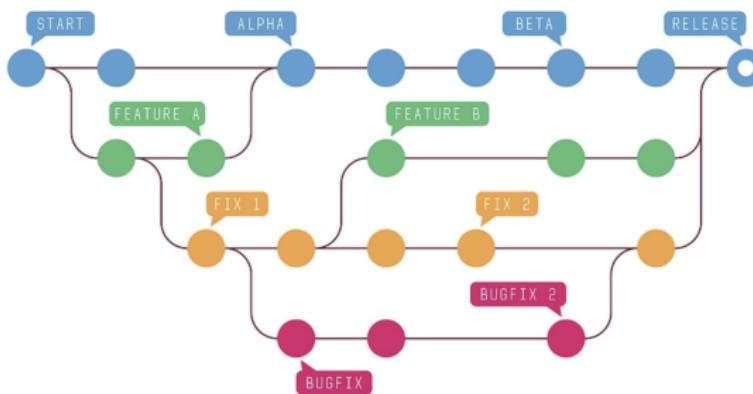
Version control and Typesetting

HOW CAN THEY HELP YOU?

Version Control

The practice of tracking and managing changes to source code over time

Really shines when working in teams on collaborative projects.



HOW CAN THEY HELP YOU?

Typesetting

Helps make your documents looks professional.

Really shines when working with equations and tables.

$$\partial_u \xi_z^{(1)} + \frac{1}{u} \xi_z^{(1)} = \frac{1}{(\pi T R)^2 u} [C_z H'_{zz} + C_t H'_{tz}]$$

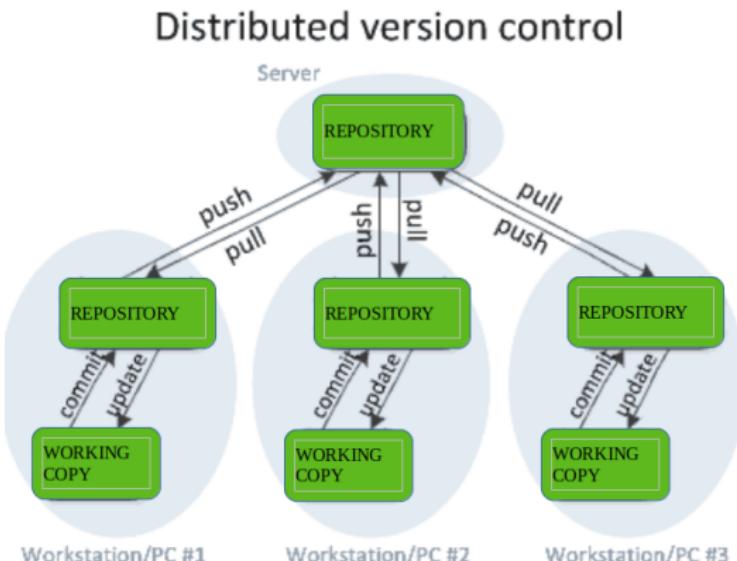


```
\partial _{\{ u \}} \xi _{\{ z \}} ^{\{ (1) \}} + \{ \frac{1}{\{ u \}} \} \xi _{\{ z \}} ^{\{ (1) \}} = \{ \frac{1}{\{ (\pi T R) ^{\{ 2 \}} u \}} \} \left[ C _{\{ z \}} H _{\{ z z \}} ^{\{ \prime \}} + C _{\{ t \}} H _{\{ t z \}} ^{\{ \prime \}} \right]
```

THE PHILOSOPHY OF GIT

Git is an open source *Distributed Version Control System* (DVCS)

Every clone is really a full backup of all the data.



THE PHILOSOPHY OF GIT

Nearly Everything is Local
Snapshots of Data
Git has Integrity



BONUS QUESTION 1!

What does Git stand for?

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What does Git stand for?

"git" can mean anything, depending on your mood.

- Random three-letter combination that is pronounceable, and not actually used by any common UNIX command. The fact that it is a mispronunciation of "get" may or may not be relevant.
- Stupid. Contemptible and despicable. Simple. Take your pick from the dictionary of slang.
- "Global information tracker": you're in a good mood, and it actually works for you. Angels sing, and a light suddenly fills the room.
- "Goddamn idiotic truckload of sh*t": when it breaks.

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Linus Torvalds, creator of Linux and Git

GIT IS NOT GITHUB!

Git is a piece of software. GitHub is an online SaaS service.

GIT	GITHUB
Installed locally	Hosted in the cloud
First released in 2005	Company launched in 2008
Maintained by The Linux Foundation	Purchased in 2018 by Microsoft
Focused on version control and code sharing	Focused on centralized source code hosting
Primarily a command-line tool	Administered through the web
Provides a desktop interface named Git Gui	Desktop interface named GitHub Desktop
No user management features	Built-in user management
Minimal external tool configuration features	Active marketplace for tool integration
Competes with Mercurial, Subversion, IBM, Rational Team Concert and ClearCase	Competes with Atlassian Bitbucket and GitLab
Open source licensed	Includes a free tier and pay-for-use tiers

HOW TO USE GIT

THIS IS GIT. IT TRACKS COLLABORATIVE WORK ON PROJECTS THROUGH A BEAUTIFUL DISTRIBUTED GRAPH THEORY TREE MODEL.

COOL. HOW DO WE USE IT?

NO IDEA. JUST MEMORIZIZE THESE SHELL COMMANDS AND TYPE THEM TO SYNC UP. IF YOU GET ERRORS, SAVE YOUR WORK ELSEWHERE, DELETE THE PROJECT, AND DOWNLOAD A FRESH COPY.



SETTING UP GIT

Install and Configure

- ▶ `git --version`
- ▶ `git config --global user.name "John Doe"`
- ▶ `git config --global user.email johndoe@example.com`

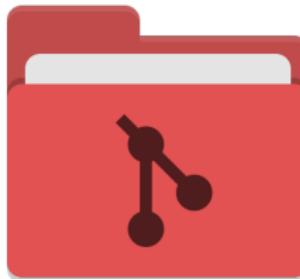


USING GIT

Initializing a Repository in an Existing Directory

- ▶ git init
- ▶ git add myfavfile.txt
- ▶ git commit -m 'my first commit'

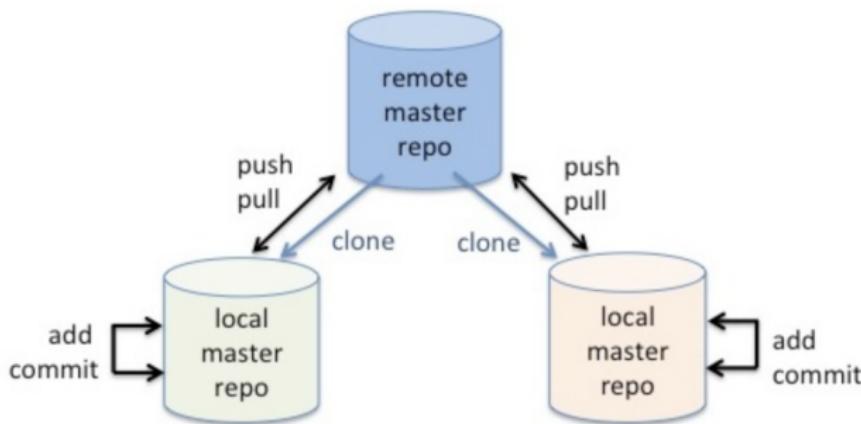
You now have a Git repo with tracked files and an initial commit!



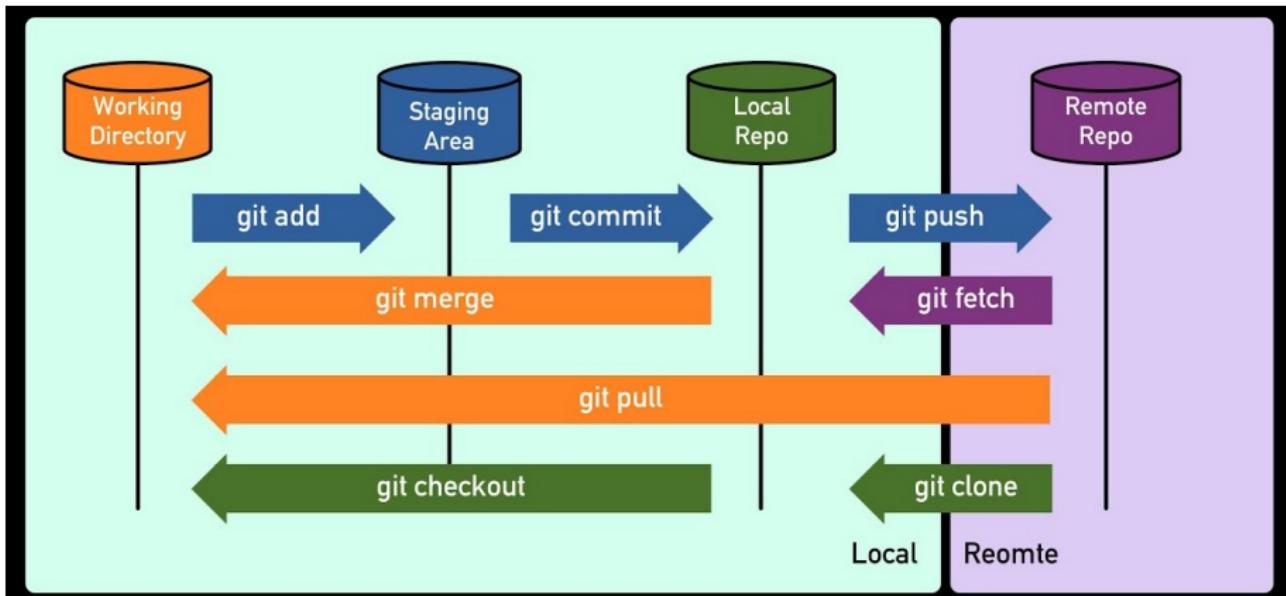
USING GIT

Cloning an Existing Repository

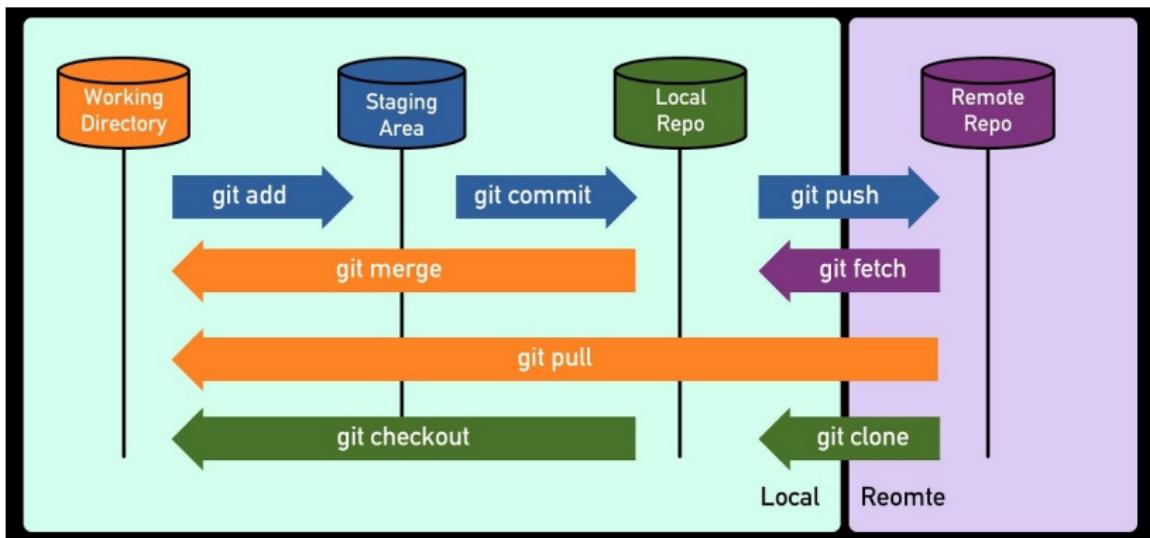
- ▶ `git clone https://github.com/mynewproject`



THE GENERAL WORKFLOW



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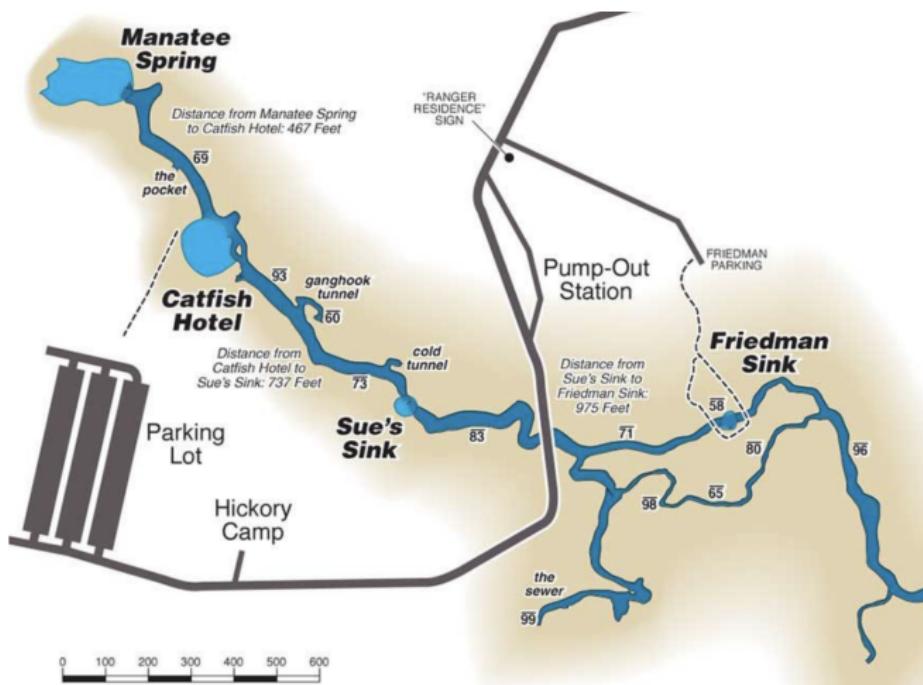


1. You modify files in your working tree.
2. You selectively stage just those changes you want to be part of your next commit, which adds **only** those changes to the staging area.
3. You do a commit, which takes the files as they are in the staging area and stores that snapshot permanently to your Git directory.

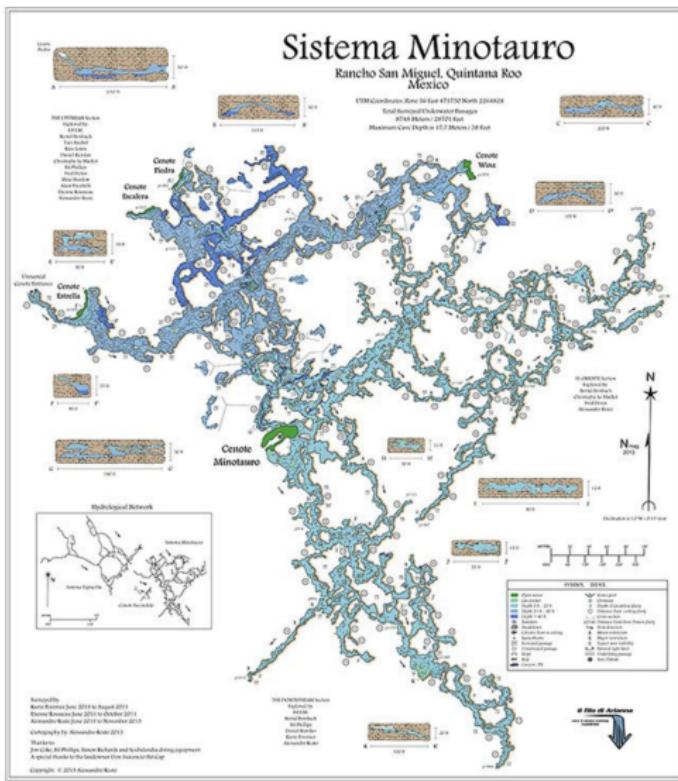
WHEN DIVING INTO GIT...



YOUR PATH CAN BE SIMPLE...

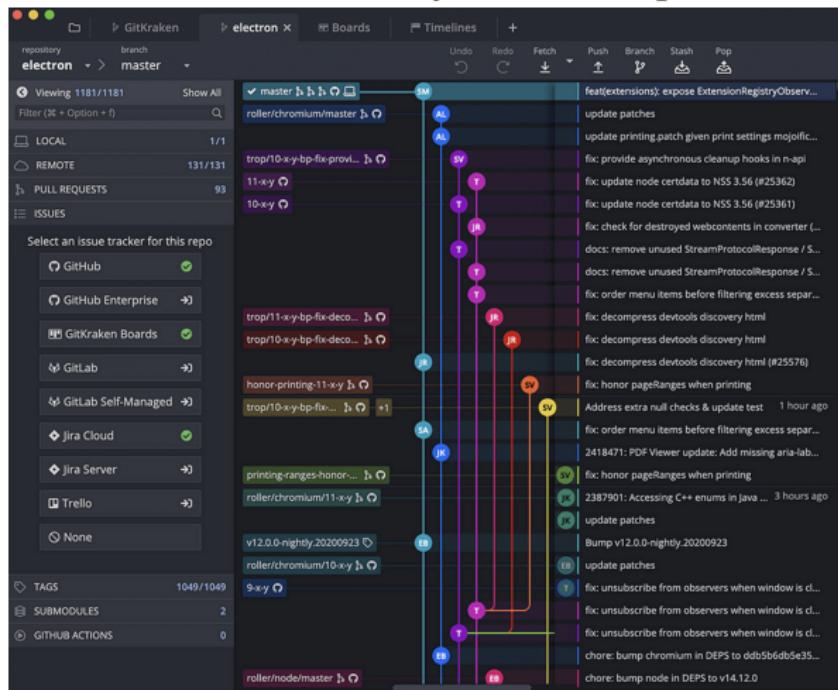


OR AS COMPLICATED AS YOU LIKE.



TOOLS FOR YOUR JOURNEY

GitHub, GitLab, and BitBucket for online servers
Gitkraken for your Desktop

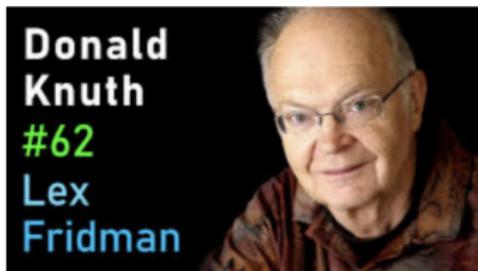


HISTORY OF TEX AND LATEX

1977 Donald Knuth developed Tex – a computer language and program designed for use in typesetting; in particular, for typesetting math and other technical material.

LaTeX was written in the early 1980s by Leslie Lamport.

TeX handles the document layout, while LaTeX handles the content side for document processing.



BONUS QUESTION 2!

What does TeX stand for?

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$\tau\epsilon\chi$

HOW TO USE LATEX

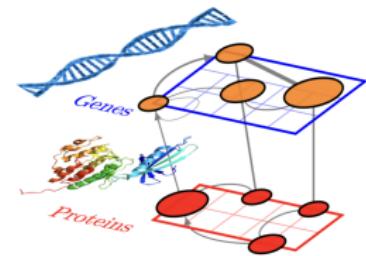
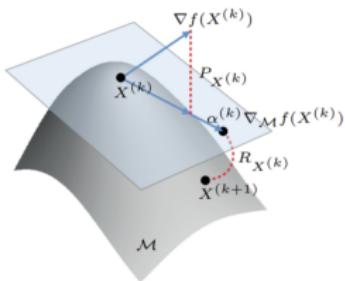
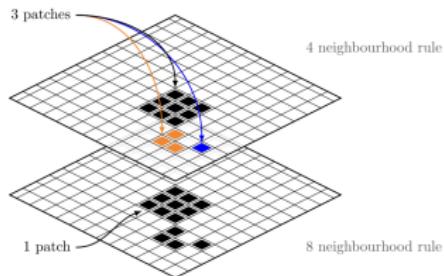
Installation

<https://www.latex-project.org>



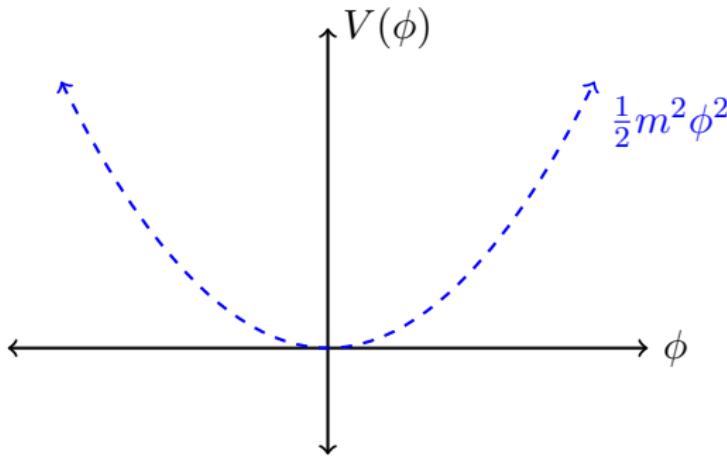
COOL STUFF IN LATEX

Graphics with the Tikz package



More than just Typesetting!

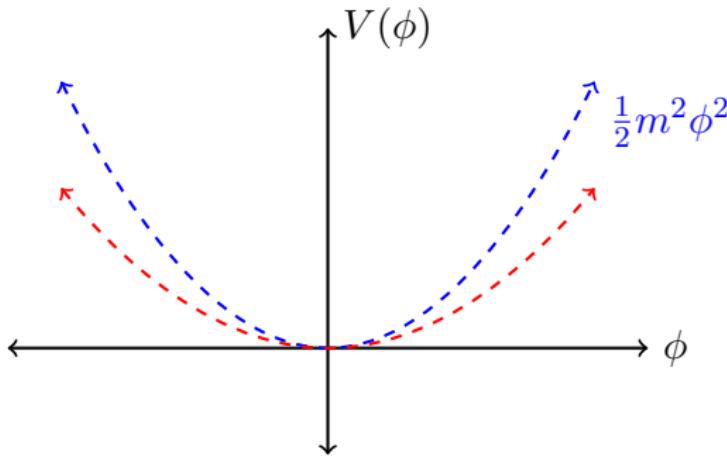
ONE EXAMPLE: CHAOTIC INFLATION



$$\ddot{\phi} + 3H\dot{\phi} + \frac{dV}{d\phi} = 0$$

Something as simple as a parabola
can determine the fate of
the Universe.

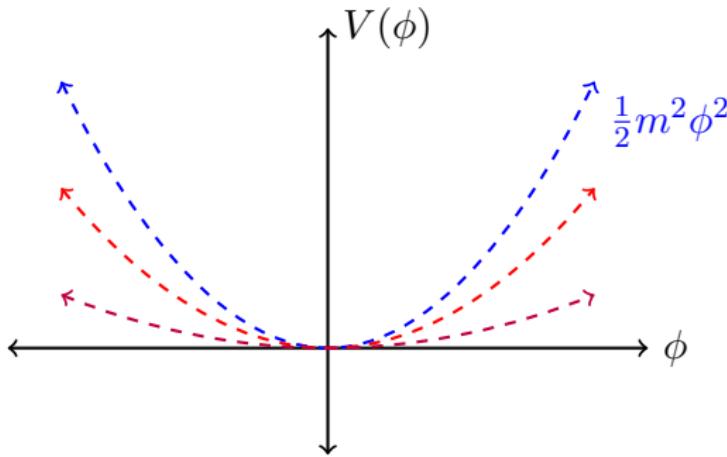
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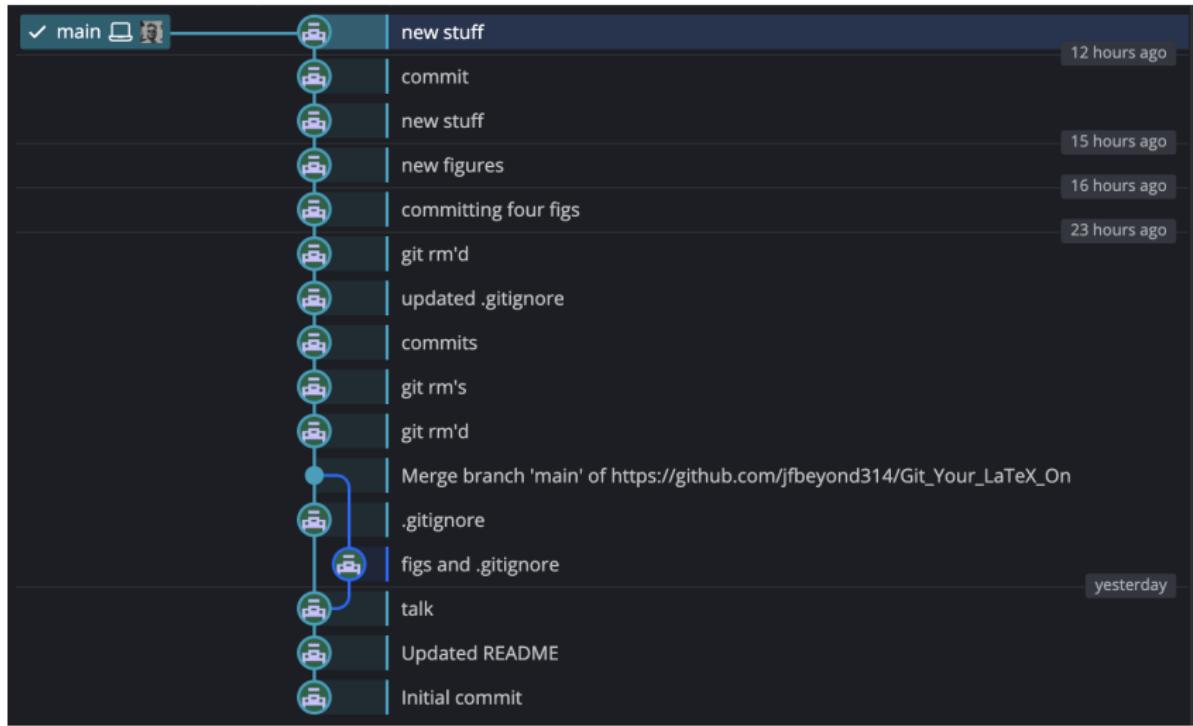
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THIS ENTIRE PRESENTATION WAS DONE USING GIT AND LATEX!



SUMMARY AND RESOURCES

Use git for all your version control needs
<https://git-scm.com/book/en/v2>

Use LaTeX for all your typesetting
<https://latex-tutorial.com>

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