Collaborative Analysis

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Stop, Collaborate, and Listen

- Slack (nifty free version)
- Dropbox
- Microsoft Teams, 365
- Github
- Google Drive, Docs, Collab
- And many others

Slack

- Instant messaging service
- “Freemium”- free version available, paid version with more features
- Used as community platform

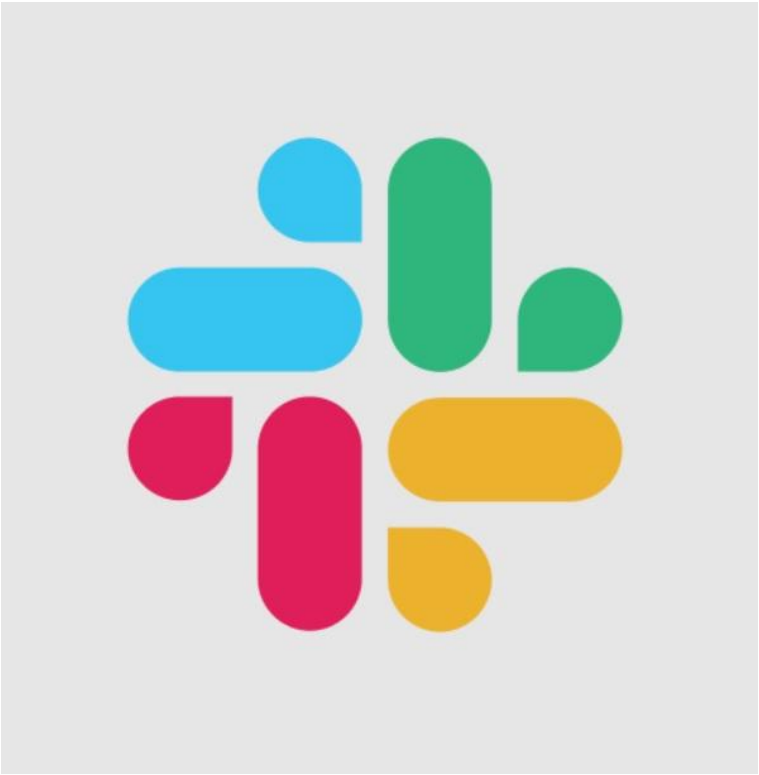

Image credit: Slack

Dropbox

- Share and save things to the cloud.
- Access from anywhere!
- Ingrates with other tools.
- Not infinite free space.

Image credit: Dropbox

Microsoft Teams

- Pros: Productivity, Easy Implementation with other Microsoft stuff, chat, channels
- Cons: Confusing file structures, lack of authority control, limited flexibility

Image credit: Microsoft

Github

- Online software development platform
- Used for storing, tracking, and collaborating on software projects
- Can be used to host and share other files, like these course materials
- Easy method for sharing code files and collaborate on open source projects

Image credit: Github

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Ori. ○ * * * Occ.

exitare tamen cæpit, quonam pacto Iuppiter ab omnibus prædictis fixis poſſet orientalior reperiri, cum à binis ex illis pridie occidentalis fuiſſet: ac proinde veritus ſum ne forte, ſecus à computo aſtronomico, directus foret, ac propterea motu proprio Stellas illas anteuertiſſet: quapropter maximo cum deſiderio ſequentem expectaui noctem; verum à ſpe fruſtratus fui, nubibus enim vndiquaque obductum fuit cælum.

At die decima apparuerunt Stellæ in eiuſmodi ad Iouem poſitu: duæ enim tantum, & orientales ambæ

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nulla ratione reponi poſſe intelligerem, atque inſuper ſpectatas Stellas ſemper eaſdem fuiſſe cognoſcerem, (nullæ enim aliæ, aut præcedentes, aut conſequentes intra magnum interuallum iuxta longitudinem Zodiaci aderant) iam ambiguitatem in admirationem permutans, apparentem commutationem non in Ioue, ſed in Stellis adnotatis repoſitã eſſe comperi, ac proinde oculatè, & ſcrupulosè magis deinceps obſeruandum fore ſum ratus.

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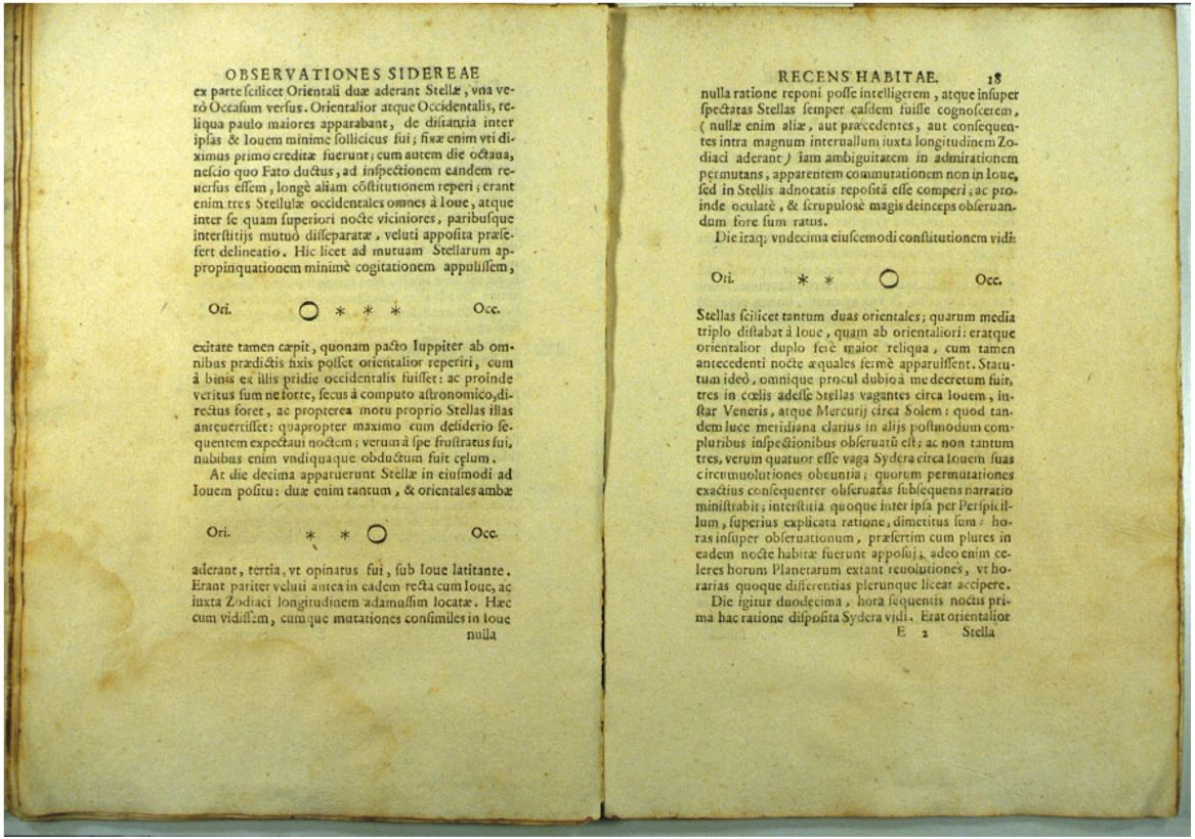
Galileo's Notebook



OBSERVATIONES SIDEREAE

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RECENS HABITAE. 18

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Galileo's notes directly integrated his **data** (drawings of Jupiter and its moons),

key **metadata** (timing of each observation, weather, and telescope properties),

and **text** (descriptions of methods, analysis, and conclusions).

- Goodman et al 2014

Goodman, Alyssa, Alberto Pepe, Alexander W. Blocker, Christine L. Borgman, Kyle Cranmer, Merce Crosas, Rosanne Di Stefano, et al. “Ten Simple Rules for the Care and Feeding of Scientific Data.” *PLOS Computational Biology* 10, no. 4 (April 24, 2014): e1003542. https://doi.org/10.1371/journal.pcbi.1003542.

Open Notebook

Sharing scientific progress *while it is happening*

openlabnotebooks.org – A growing team of groundbreaking scientists around the world are now sharing their lab notebooks online

Image Credit: openlabnotebooks.org homepage screenshot

Jupyter Notebooks

Computers are good at consuming, producing and processing data. Humans, on the other hand, process the world through narratives. Thus, in order for data, and the computations that process and visualize that data, to be useful for humans, they must be embedded into a narrative - a computational narrative - that tells a story for a particular audience and context.

Perez, Fernando, and Brian E. Granger. "*Project Jupyter: Computational narratives as the engine of collaborative data science.*"

Image credit: Jupyter

Google Colaboratory (Colab)

- Internal branch of Jupyter that Google released for public use
- A variant of Jupyter, but also:
  - Has collaboration. Work together like in Google Docs!
  - Runs on the web < Easier to hop in and reproduce research
  - Included free computational resources from Google

Pair programming

- Pair programming is an agile software development technique in which two programmers work together at one workstation. One, the driver, writes code while the other, the observer or navigator, reviews each line of code as it is typed in. The two programmers switch roles frequently.

- While reviewing, the observer also considers the "strategic" direction of the work, coming up with ideas for improvements and likely future problems to address. This is intended to free the driver to focus all of their attention on the "tactical" aspects of completing the current task, using the observer as a safety net and guide.

Participation Activity #5 – Part 1

- Use Colab by copying this notebook
- https://colab.research.google.com/github/tensorflow/hub/blob/master/examples/colab/tf2_arbitrary_image_stylization.ipynb
- Upload a new image and convert (save to include in your report)

Image Credit: Wade Bishop, Google Colab

Participation Activity #5 - Part 2

- Pick one of the Ten Favourite Colab Notebooks or others if you know of others and work through another exercise
- Save a copy in DRIVE
- https://github.com/firmai/awesome-google-colab
- Upload a brief reflection into Canvas discussion board