

# Introduction to GitHub and Collaboration between GitHub and MATLAB

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# In This Introduction you will:

Learn about what is GitHub

Learn about basic features about  
GitHub, how GitHub operates on  
web and with IDE / Code Editors

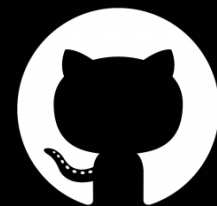
Learn how GitHub and MATLAB  
work together

A short workshop for you to try out  
GitHub



What is  
GitHub?

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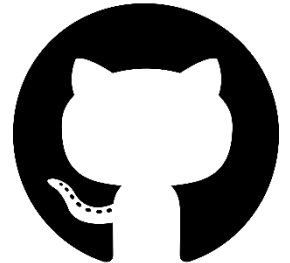




# GitHub

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- A social network and platform for software developers
- Over 65 million users
- A place to Share, Communicate, **Collaborate** with others, especially programmers



# Interface of GitHub

The screenshot shows the GitHub Desktop application. The top bar includes File, Edit, View, Repository, Branch, and Help. The main area is divided into three panes: a commit history list on the left, a commit details pane in the middle, and a diff view on the right.

**Commit History:**

- Changes: iAmWillShepherd committed a day ago
- History: Add event handler to dropdown component (iAmWillShepherd and Markus Olsson committed c79e71c, 1 changed file)
- Remove event handler from the branches... (iAmWillShepherd and Markus Olsson committed a day ago)
- Merge branch 'master' into esc-pr (iAmWillShepherd committed a day ago)
- Merge pull request #4044 from desktop/... (Neha Batra committed a day ago)
- Merge pull request #4070 from desktop/... (Brendan Forster committed 2 days ago)
- bump to beta3 (Brendan Forster committed 2 days ago)
- Merge pull request #4057 from desktop/... (Brendan Forster committed 2 days ago)
- Merge pull request #4067 from desktop/... (Brendan Forster committed 2 days ago)
- Release to 1.1.0-beta2 (Neha Batra committed 2 days ago)

**Commit Details:** Add event handler to dropdown component. Co-Authored-By: Markus Olsson <nii@users.noreply.github.com>

**Diff View:** app\src\ui\toolbar\dropdown.tsx

```
@@ -145,6 +145,10 @@ export class ToolbarDropdown extends React.Component {
  this.state = { clientRect: null }
}
+ private get isOpen() {
+   return this.props.dropdownState === 'open'
+ }
+ private dropdownIcon(state: DropdownState): OcticonSymbol {
  // @TODO: Remake triangle octicon in a 12px version,
  // right now it's scaled badly on normal dpi monitors.
@@ -249,6 +253,13 @@ export class ToolbarDropdown extends React.Component {
}
+ private onFoldoutKeyDown = (event: React.KeyboardEvent<HTMLElement>) => {
+   if (!event.defaultPrevented && this.isOpen && event.key === 'Escape') {
```

The screenshot shows the GitHub web interface for the repository `-POLYU / PolyU_AAE2004_Github_Project`. The repository is public and has 2 branches and 0 tags.

**Repository Overview:**

- This branch is 99 commits ahead, 8 commits behind `qmohu/PolyU_ENG1003_AAE_FP`.
- Contributors: melvincheng0830 (626576 commits, 16 days ago).
- Files: Lecture Notes, Lecture Videos, README Tutorial, Sample Codes, .DS\_Store, LT HSU AAE2004 Teaching Plan 2022..., Peer review\_AAE2004.docx, readme.md.

**Project Details:**

- Teaching Plan**
- Assessment Criteria**
- Project Objective:** To provide students with opportunities to develop creativity, problem-solving skills and team-work abilities through a group project. During this project, students will get not only the valuable practical experience to use computer programming language to design and develop a path planning algorithm for an aircraft operation from scratch but also practical skills of using online collaborating programming platform to work with group members remotely.

**Right Sidebar:**

- About:** No description, website, or topics provided. 0 stars, 0 watching, 17 forks.
- Releases:** No releases published. [Create a new release](#).
- Packages:** No packages published. [Publish your first package](#).
- Languages:** Python 100.0%.



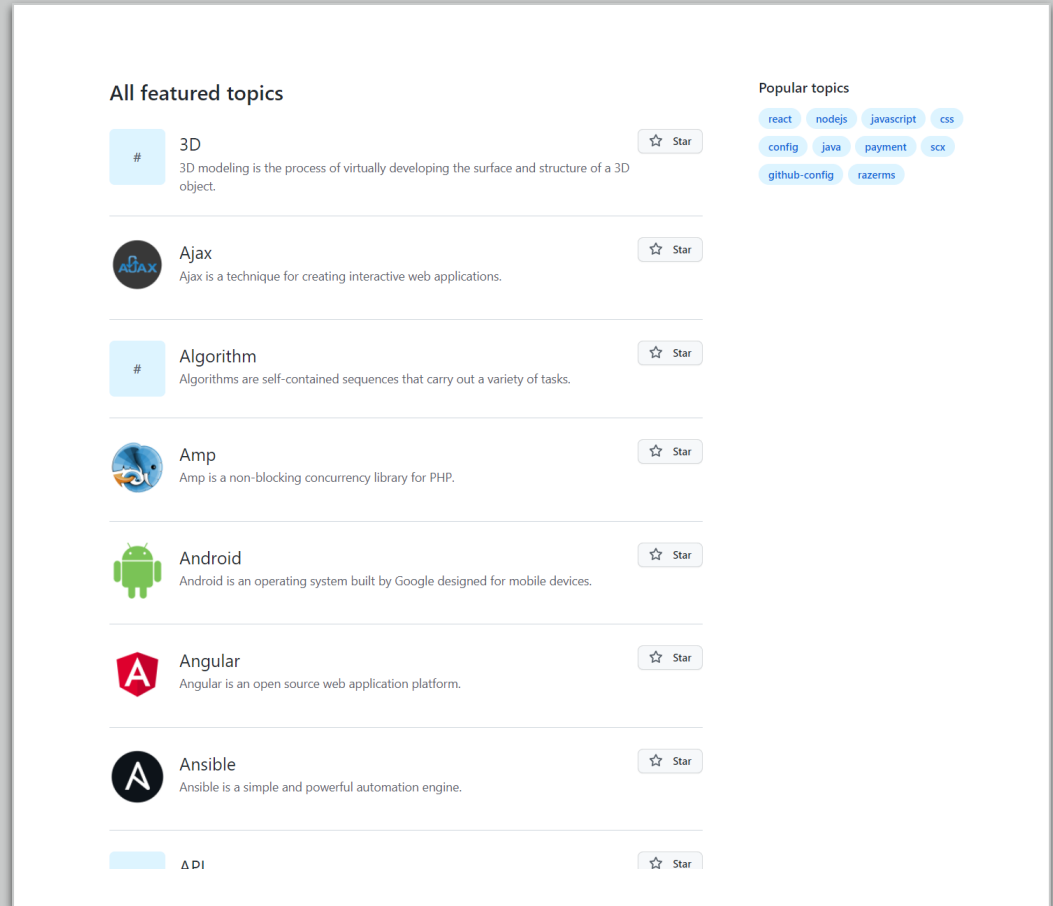
# Popularity of GitHub


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- Over 100 million live Projects
- New projects increasing over the years
- Showing the trend of using GitHub for Software development
- Countless topics and projects available for the public, encompassing most popular topics nowadays

# Popular Topics Include:

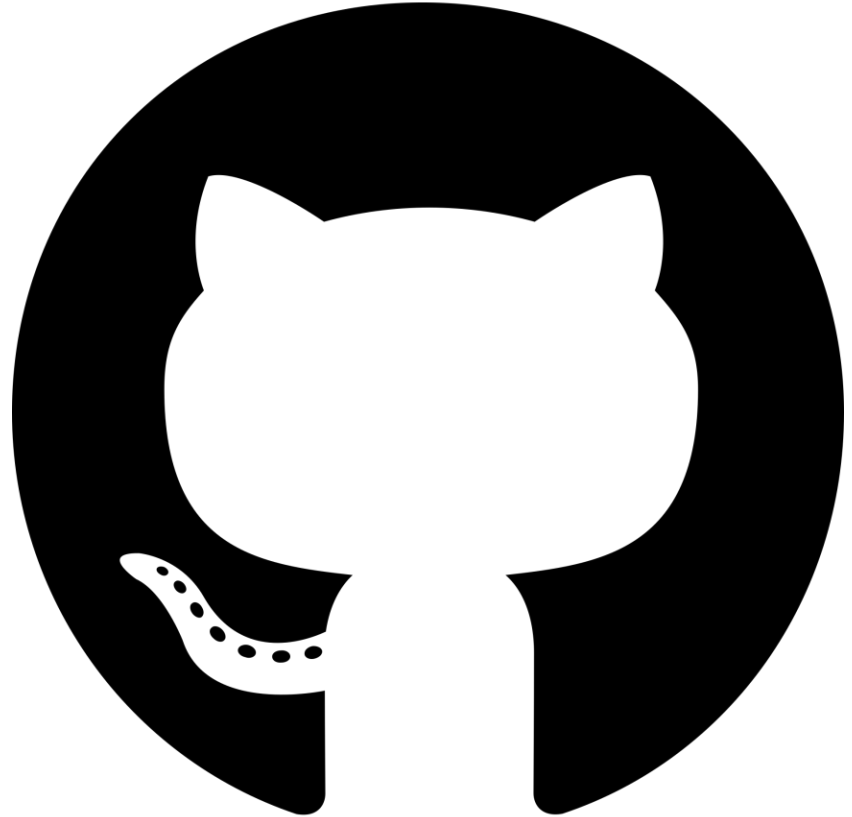
- Bitcoin
- AWS
- Chrome
- Anything Software Related!





What's on  
GitHub?  
How is it related  
to AAE?

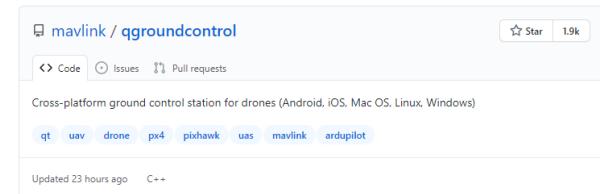
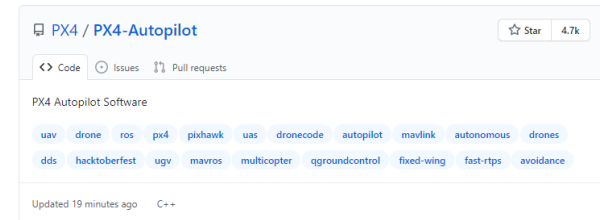
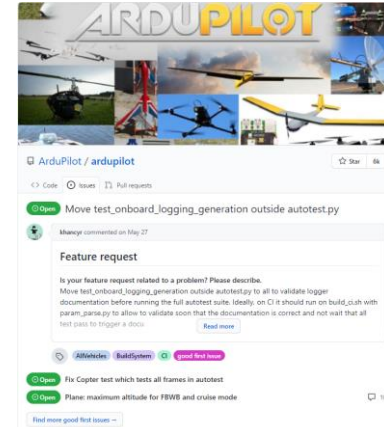
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# Flight control softwares for UAV

Ardupilot, PX4 and more



# About These Softwares

## Ardupilot:

- Open source software suite
- Quadcopters, VTOL and more
- Cross platform
- Over 10 years of development and improvement



## PX4:

- Also open source
- Works with QGC and MAVLink (Also available in GitHub)



# Aviation Services Engineering

Logistics and Facility Management  
and more

# airport

Here are 148 public repositories matching this topic...

Language: All ▾ Sort: Best match ▾

Ysurac / FlightAirMap

☆ Star 388

<> Code Issues Pull requests

Open source project displaying live aircrafts, ships or trackers on 2D/3D map. Browse through the data based on a particular aircraft, airline, airport, tracker or vessel to search through the database or see extensive statistics. Can use ADS-B in SB51 format (dump1090, Radarcape...), VRS, VA (VATSIM, IVAO whazzup.txt, phgvm...), ACARS (acarsdec, acarsdeco2), APRS, AIS as datasource.

[tracker](#) [cesium](#) [crash](#) [metar](#) [airport](#) [airline](#) [flight](#) [ship](#) [vatsim](#) [aircraft](#) [ivao](#) [acars](#)

[glidemet](#) [phgvm](#) [notam](#) [modes](#) [ads-b](#) [ais](#) [vessel](#) [3d-map](#)

Updated on Nov 25, 2020 TSQJ

felix-dumit / FSDAirportFlipLabel

☆ Star 83

<> Code Issues Pull requests

UILabel like old Airport flipping labels

[ios](#) [label](#) [ios-animation](#) [airport](#)

Updated on Mar 9, 2018 Objective-C

Ivysauro / CNRT

☆ Star 74

<> Code Issues Pull requests Discussions

中國軌道交通數據庫 ( 非技術類 ) - 另一角度看地鉄 / Data base of China Rail Transit (Non-tech) - Another view of Rail Transit

[bus](#) [metro](#) [payment](#) [railway](#) [china](#) [airport](#) [subway](#) [rail-transit](#)

Updated 3 days ago SCSS

gravity-EDDS / EDDS-freeware-releases

☆ Star 57

<> Code Issues Pull requests

Go to file
17 pages
About

### Michal MK Fix durability rendering (#1623)

✓ ready to ship on Jun 29 · 1,947 commits

File	Description	Last commit
<code>.idea</code>	Update project's code style files	4 months ago
<code>common/logicPipes</code>	Fix durability rendering (#1623)	last month
<code>dummysrc/main.java</code>	Remove dummy sub-project, add mc to arc and dummy	10 months ago
<code>graphics/wrapper</code>	Update to FGA, Gradle and some dependencies	3 months ago
<code>lib</code>	Switch to local jar for AE2	4 months ago
<code>resources</code>	Refactor fluid terminus pipe	3 months ago
<code>resourcepack</code>	Let's not render stuff in the block class.	3 years ago
<code>run-server</code>	No more LP dummy (#1567)	2 years ago
<code>run</code>	No more LP dummy (#1567)	2 years ago
<code>src</code>	Refactor fluid terminus pipe	3 months ago
<code>style</code>	Remove deprecated style files	3 years ago
<code>gradlew.bat</code>	Update to FGA, Gradle and some dependencies	3 months ago
<code>gitignore</code>	Add Microsoft integration tests	3 months ago
<code>zshrc.yml</code>	Make Travis run integration tests	3 months ago
<code>BUILDING.md</code>	More descriptive BUILDING.md (#1621)	2 months ago
<code>LICENSE.md</code>	Add LICENSE.md	8 years ago
<code>README.md</code>	Updated Jenkins link, add Matrix link	16 months ago
<code>build.gradle</code>	Fix generating the shadow jar	2 months ago
<code>gradle.properties</code>	Update to FGA, Gradle and some dependencies	3 months ago
<code>gradlew</code>	Update to FGA, Gradle and some dependencies	3 months ago
<code>gradlew.bat</code>	Update to FGA, Gradle and some dependencies	3 months ago
<code>lombok.config</code>	Add ght lfm commands for lombok	4 months ago
<code>resources.txt</code>	Update lombok and lombok.config file to root folder	5 years ago
<code>settings.gradle</code>	Update to FGA, Gradle and some dependencies	3 months ago
<code>README.md</code>		

[Read full history](#)
[View details](#)

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## LogisticsPipes

Based on Java · View details · 16.2k

### Repositories

- Code: 1M
- Commits: 27K
- Issues: 17K
- Discussions: 100
- Packages: 4K
- Marketplace: 27
- Topics: 100
- Wikis: 1K
- Users: 20K

### Languages

- Java: 100.0%
- Python: 0.0%
- C++: 0.0%
- C#: 0.0%
- Ruby: 0.0%
- JavaScript: 0.0%
- TypeScript: 0.0%
- PHP: 0.0%
- Go: 0.0%
- Kotlin: 0.0%
- Dart: 0.0%
- Swift: 0.0%
- Objective-C: 0.0%
- Perl: 0.0%
- Scala: 0.0%
- Julia: 0.0%
- Elixir: 0.0%
- Haskell: 0.0%
- Crystal: 0.0%
- Lua: 0.0%
- Vala: 0.0%
- Fortran: 0.0%
- Visual Basic: 0.0%
- Smalltalk: 0.0%
- VBScript: 0.0%
- Shell: 0.0%
- Batch: 0.0%
- PowerShell: 0.0%
- YAML: 0.0%
- JSON: 0.0%
- XML: 0.0%
- HTML: 0.0%
- Markdown: 0.0%
- Text: 0.0%
- Other: 0.0%

### Machine learning

Machine learning is a way of modeling and interpreting data that allows a piece of software to respond intelligently.

[See topics](#)

## 339,410 repository results

[Sort: Best match](#)

**Josephmishki/awesome-machine-learning**  
A curated list of awesome Machine Learning frameworks, libraries and software.  
🌟 31k · Python · Updated 10 days ago

**weeps/MachineLearning**  
Basic Machine Learning and Deep Learning  
🌟 4.2k · Python · Updated on Oct 2, 2020

**udacity/machine-learning**  
Content for UDA's Machine Learning curriculum  
🌟 3.6k · JavaScript · Updated on Apr 7

**Jack-Cherish/Machine-Learning**  
机器学习资源 (Python) : kNN, 决策树, 贝叶斯, 逻辑回归, SVM, 神经网络, 集成学习  
🌟 3.4k · Python · Updated on Jul 7

**lawliet19/MachineLearning\_Python**  
机器学习资源 (Python)  
🌟 4.1k · Python · Updated on Dec 16, 2020

# Aeronautical Engineering

Material, aircraft designs, CFD and more

## # computational-fluid-dynamics

Here are 198 public repositories matching this topic...

Language: All Sort: Best match

**doyubkim / fluid-engine-dev** ☆ Star 11k

<> Code Issues Pull requests

Fluid simulation engine for computer graphics applications

c-plus-plus visual-studio sdk animation computer-graphics physics-engine computational-physics

fluid-simulation-engine computational-fluid-dynamics

Updated on Apr 23 C++

**CubbyFlow / CubbyFlow** ☆ Star 175

<> Code Issues Pull requests

Voxel-based fluid simulation engine for computer games

cplusplus cpp computer-graphics physics-engine computational-physics cplusplus

fluid-simulation-engine computational-fluid-dynamics

Updated 6 days ago C++

**AvtechScientific / ASL** ☆ Star 153

<> Code Issues Pull requests

Advanced Simulation Library - hardware accelerated multiphysics simulation platform.

crystallography gpgpu scientific-computing high-performance-computing design-space-exploration

computational-fluid-dynamics virtual-sensing image-guided-surgery computer-aided-engineering

Updated on Dec 21, 2018 C++

**loliverhennigh / Steady-State-Flow-With-Neural-Nets** ☆ Star 119

<> Code Issues Pull requests

A Tensorflow re-implementation of the paper Convolutional Neural Networks for Steady Flow Approximation

## # aircraft-design

Here are 21 public repositories matching this topic...

Language: All Sort: Best match

**JSBSim-Team / jsbsim** ☆ Star 394

<> Code Issues Pull requests Discussions

**XML validation** 14

bocconesi commented on Jan 12, 2019

JSBSim provides schemas for XML validation (.jsbsim.xml for flight models, .jsbsimscript.xml for script files and .jsbsimsystem.xml for system files) but they have not been updated for a while so they might reject perfectly valid XML files.

XML files can be tested with `xmlint`

```
> xmlint --root --schema .jsbsim.xml --file.xml
```

[Read more](#)

help help wanted good first issue

**Aero Sandbox**

by Peter Sharpe

**peterdsharpe / AeroSandbox** Sponsor ☆ Star 236

<> Code Issues Pull requests

Aircraft design optimization made fast through modern automatic differentiation. Plug-and-play analysis tools for aerodynamics, propulsion, structures, trajectory design, and much, much more.

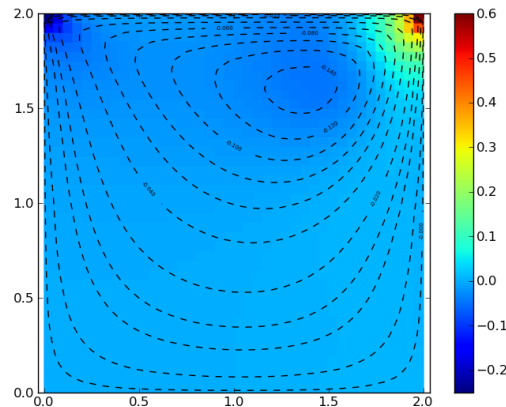
python analysis optimization aerospace automatic-differentiation airplane cfd aircraft

aerodynamics vlm xfoil aircraft-design mdo mdao aerodynamic-analysis 3d-panel

Unlabeled & class anno Summer Notebook

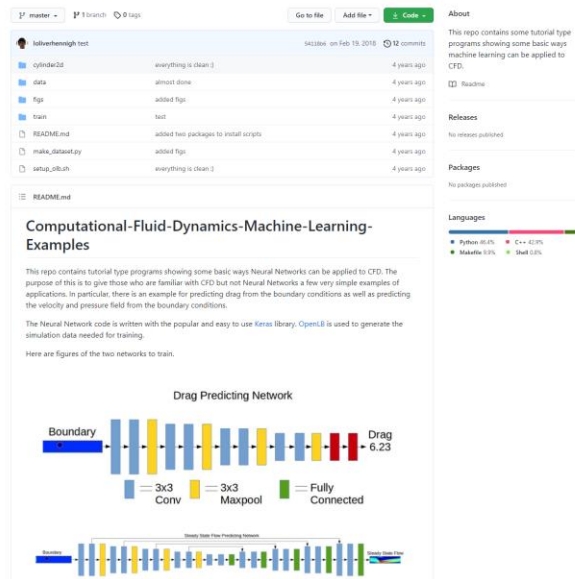
# CFD Python

- Full course for CFD Python
- Course Materials (Lectures and videos)
- Software resources



# CFD and Machine Learning

- Making use of ML
- Showing how neural networks can be applied to CFD



# Aircraft Maintenance

Propulsion, NDT and more

The screenshot shows the GitHub profile of the NASA Jet Propulsion Laboratory. The header includes the NASA logo, the organization name, and a brief description: "A world leader in the robotic exploration of space". It also lists the location (Pasadena, California, US), the website (http://www.jpl.nasa.gov), and the GitHub repository (github@jpl.nasa.gov). Below the header, there are tabs for Overview, Repositories (26), Packages, People (6), and Projects. The "Pinned" section displays six repositories in a grid. The "Repositories" section below shows a list of repositories with search filters for Type, Language, and Sort. Each repository entry includes the repository name, a brief description, the primary language, star count, fork count, and a small green waveform icon.

**NASA Jet Propulsion Laboratory**  
A world leader in the robotic exploration of space  
Pasadena, California, US <http://www.jpl.nasa.gov> [github@jpl.nasa.gov](mailto:github@jpl.nasa.gov)

Overview Repositories 26 Packages People 6 Projects

**Pinned**

- open-source-rover**  
A build-it-yourself, 6-wheel rover based on the rovers on Mars!  
Gnuplot 6.8k 1.1k
- osr-rover-code**  
Code that runs on the Open Source Rover  
Python 267 96
- COVID-19-respirators**  
JPL designed 3D and tested printed respirators to help with the COVID-19 pandemic response.  
G-code 104 18
- osr-android-app**  
Android application used to control the Open Source Rover  
Java 59 30
- SPOC**  
A website showcasing SPOC (Soil Property and Object Classification), a deep learning-based terrain classifier for Mars rovers  
HTML 6 1
- spoc\_lite**  
A light-weight, experimental terrain classifier for Mars rovers  
C++ 7 4

**Repositories**

Find a repository... Type Language Sort

- itslive**  
A NASA MEaSUREs project to provide automated, low latency, global glacier flow and elevation change datasets  
Jupyter Notebook 4 MIT 0 3 0 0
- LiveViewLegacy**  
Real-time tools for Imaging Spectroscopy Data  
C++ 18 7 0 0 0
- open-source-rover**  
A build-it-yourself, 6-wheel rover based on the rovers on Mars!  
Gnuplot 6,785 Apache-2.0 1,104 34 (1 issue needs help) 8
- itslive-projects**  
Jupyter Notebook 0 MIT 0 0 0 0
- sstmp**  
Solar System Treks Mosaic Pipeline  
Python 4 Apache-2.0 0 21 0
- jsd**  
Just SOEM Drivers

# Example on NDT

- Resources on the whole conference
  - 20th World Conference on Non-Destructive Testing
- Documentation and software resources
- Applying LSTM to NDT

The screenshot shows the GitHub repository page for 'xaviergoby/LSTMforSHM'. The repository is a Merge branch 'master' of https://github.com/xaviergoby/LSTMforSHM, created on Oct 21, 2020, with 67 commits. The file list includes: configs\_and\_settings (recent work, 10 months ago), literature (non-code commit, 13 months ago), results (Merge branch 'master' of https://github.com/xaviergoby/LSTMforSHM, 10 months ago), src (recent work, 10 months ago), .gitignore (recent work, 10 months ago), LICENSE (Initial commit, 2 years ago), README.md (Revert "Revert "Results Update"", 13 months ago), \_init\_.py (1st commit of og Vicent lstm & my data\_loading script w/ data and labels, 2 years ago), call\_mainscript.py (Update results, 10 months ago), main.py (recent work, 10 months ago), main\_v2.py (Merge branch 'master' of https://github.com/xaviergoby/LSTMforSHM, 10 months ago), main\_v3\_xav.py (recent work, 10 months ago), p2atR.jpg (non-code commit, 13 months ago), and settings.py (recent work, 10 months ago).

The README.md file is displayed, containing the following information:

## Sequential Modelling in Data-Driven Approach for Structural Health Monitoring by Recurrent Convolutional Neural Networks

Conference: 20th World Conference on Non-Destructive Testing  
Location & Date: South Korea, Seoul - June 2020  
Co-authors: Ewald V., Goby X., Groves R.M. & Benedictus R.  
Laboratory: TU Delft Aerospace NDT Lab

### Usage Instruction

In order to make use of this project all you need mainly be concerned with is the main.py Python script. In it you shall (hopefully) find yourself a more than sufficient amount of documentation in order to understand and be able to make use of it!

### Dev Progress Log-Journal, Data Characteristics & Background Information

Notes:

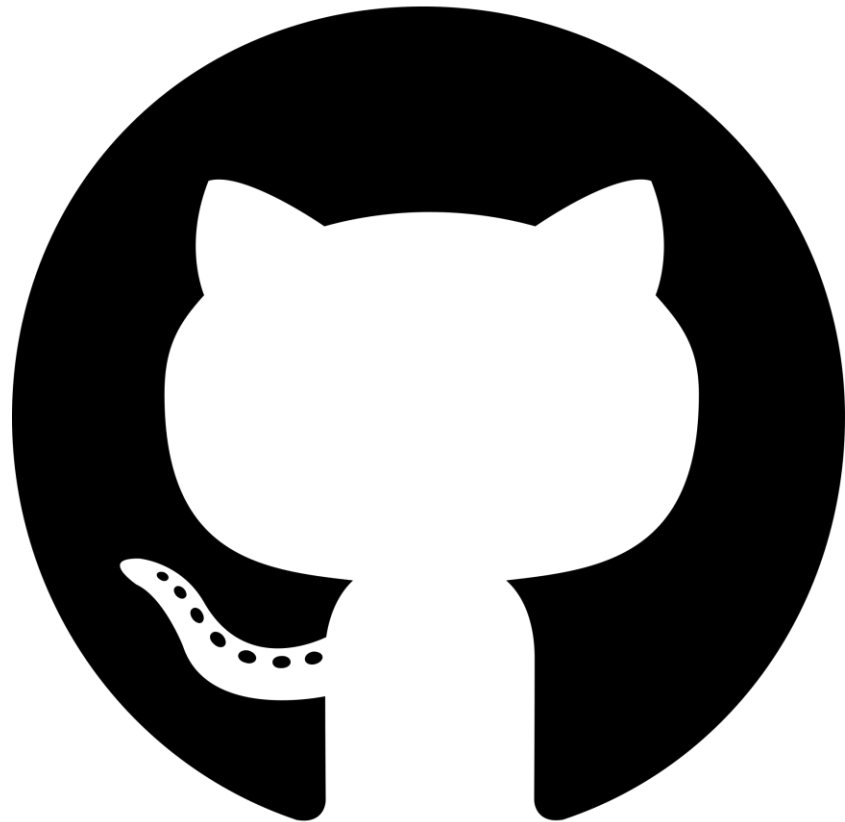
The right sidebar shows the repository's metadata: Application of LSTM network for Structural Health Monitoring & Non-Destructive Testing. It lists related repositories like computer-vision, timseries, tensorflow, keras, con, waves, lstm, supervised-learning, classification, shm, ultrasonic-sensor, ndt, structural-engineering, structural-analysis, convlstm, structural-health-monitoring, lambwaves, pit, aircraft-inspection, and non-destructive-testing. It also shows the MIT License, no releases published, no packages published, 2 contributors (xaviergoby and vewald), 1 environment (github-pages, Active), and 100.0% Python language usage.





# Features of GitHub

Credit to Dr. L.T. Hsu



# Mutual editing on a document with collaborators remotely?

acceptance	26/3/2021 11:58 AM	File folder	
final submission	2/8/2021 11:38 AM	File folder	
ieee_taes_novatel_heatmap	29/7/2020 2:44 PM	File folder	
My EndNote Library.Data	20/7/2020 9:17 PM	File folder	
My EndNote Library.enl.unzipped	14/7/2020 9:26 AM	File folder	
revision 1	28/12/2020 5:31 PM	File folder	
Artical file (single column).docx	24/8/2020 3:55 PM	Microsoft Word D...	4,036 KB
Article Processing Charges.pdf	19/4/2021 9:33 AM	Adobe Acrobat D...	118 KB
cover letter.docx	28/7/2020 12:26 PM	Microsoft Word D...	17 KB
figure.pptx	22/6/2020 11:11 AM	Microsoft PowerP...	7,122 KB
ieee_taes_3dma_rtk (20200612 Ivan).docx	22/6/2020 10:12 AM	Microsoft Word D...	4,103 KB
ieee_taes_3dma_rtk (20200622 GH).docx	22/6/2020 2:52 PM	Microsoft Word D...	4,112 KB
ieee_taes_3dma_rtk (20200709 WS).docx	9/7/2020 3:38 PM	Microsoft Word D...	4,294 KB
ieee_taes_3dma_rtk (20200714 LT).docx	15/7/2020 5:47 PM	Microsoft Word D...	4,306 KB
ieee_taes_3dma_rtk (20200722 lucy).docx	23/7/2020 4:49 PM	Microsoft Word D...	7,319 KB
ieee_taes_novatel_heatmap.rar	29/7/2020 2:42 PM	WinRAR archive	13,851 KB
Manuscript_two_columns.docx	13/10/2020 1:45 PM	Microsoft Word D...	4,030 KB
My EndNote Library.enl	8/1/2021 10:42 AM	EndNote Library	141 KB
References.docx	14/7/2020 9:16 AM	Microsoft Word D...	18 KB

Download files from various channels, such as mail, whatsapp, etc?

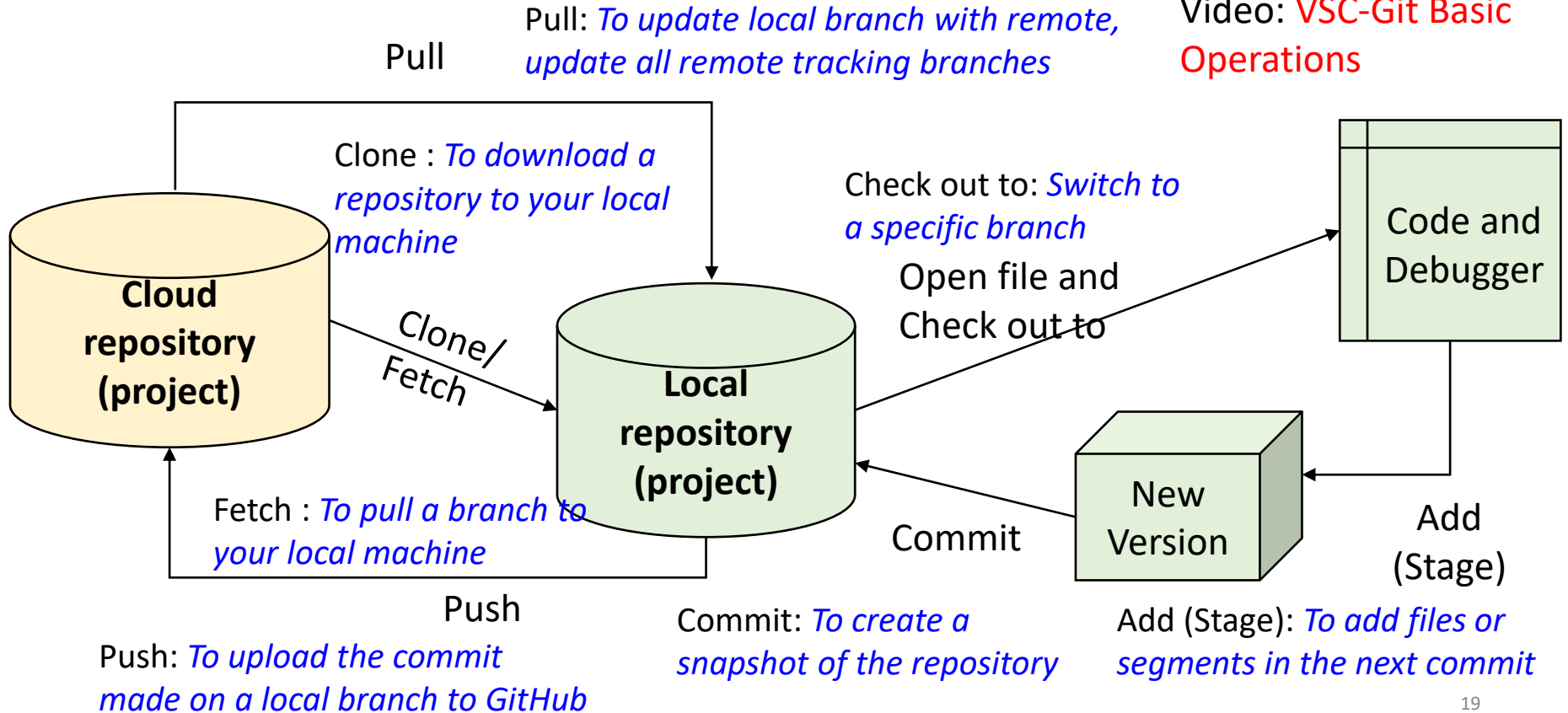
Can we edit the documents online ? Google, Microsoft has the solutions!

Can we edit the “code” online?

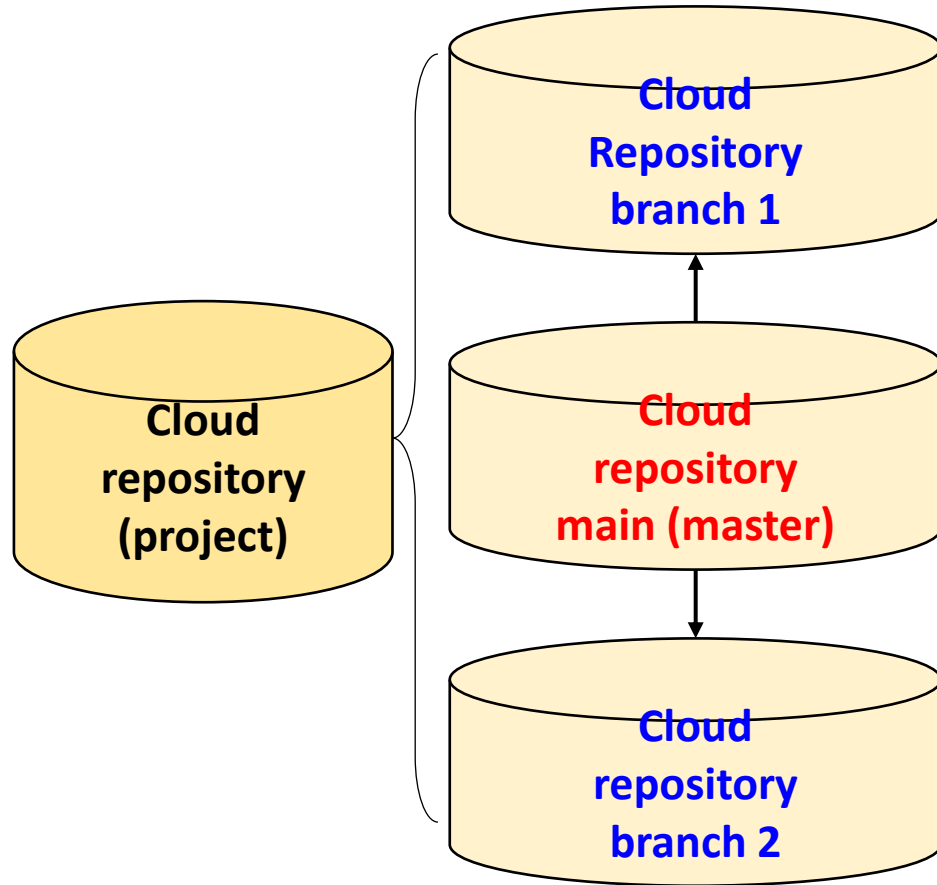
**Github**

# Archive your coding online (in the cloud)

Video: **VSC-Git Basic Operations**



## Collaborative coding online – Generate Branch (Member)



To generate a branch for different member that participant the project, creating a contained area of your repository to develop features, fix bugs and more.

# Features of GitHub Makes Collaborative Programming:

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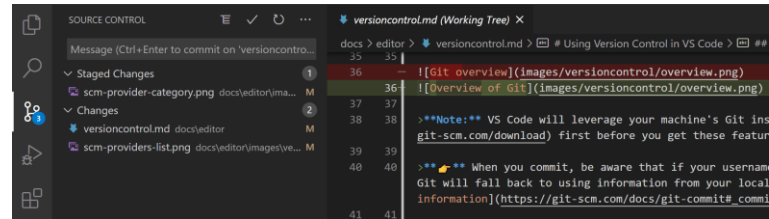
- More connected and updated between teammates
- Easier to trace back versions of the code
- Easier to develop updates and new features
- Easier to achieve source control
- And more...



# GitHub and MATLAB

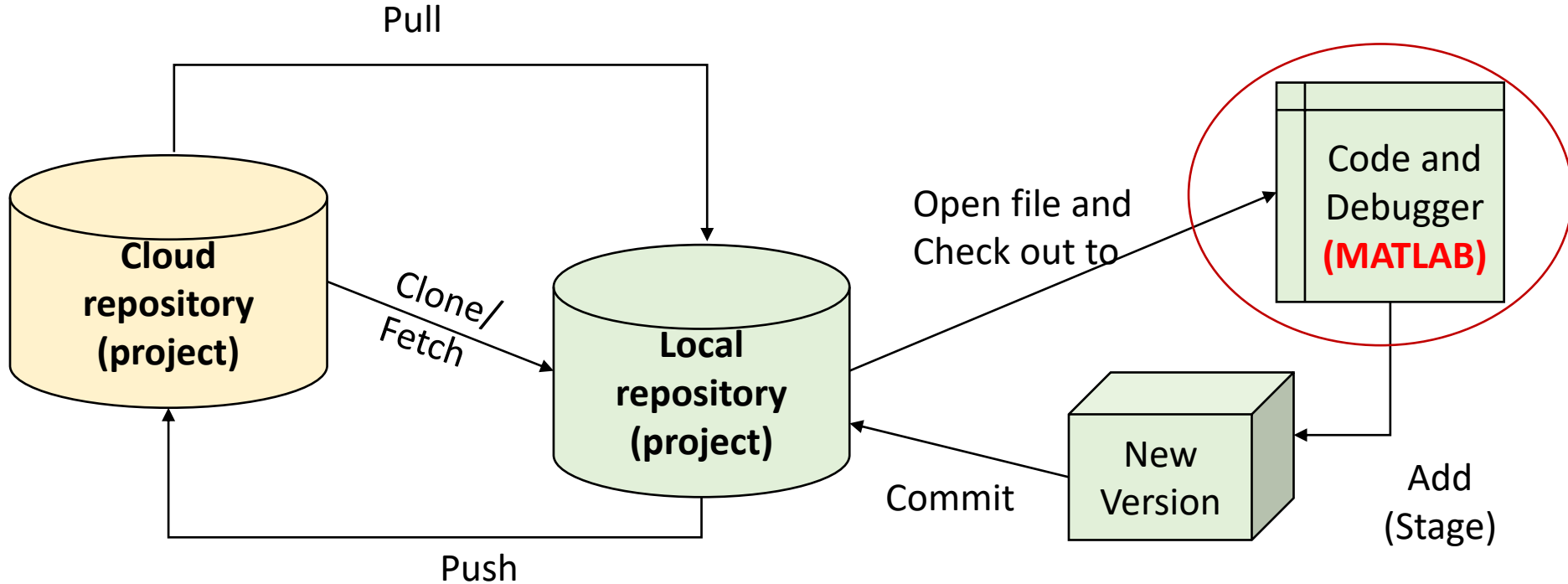
# Using GitHub and MATLAB Together

- Git (The underlying base behind GitHub) can work with different Code Editors and IDE
  - Most common: VS Code
- MATLAB is also supported in terms of Git integration!





# Remember This Chart?





# Hands-on Session

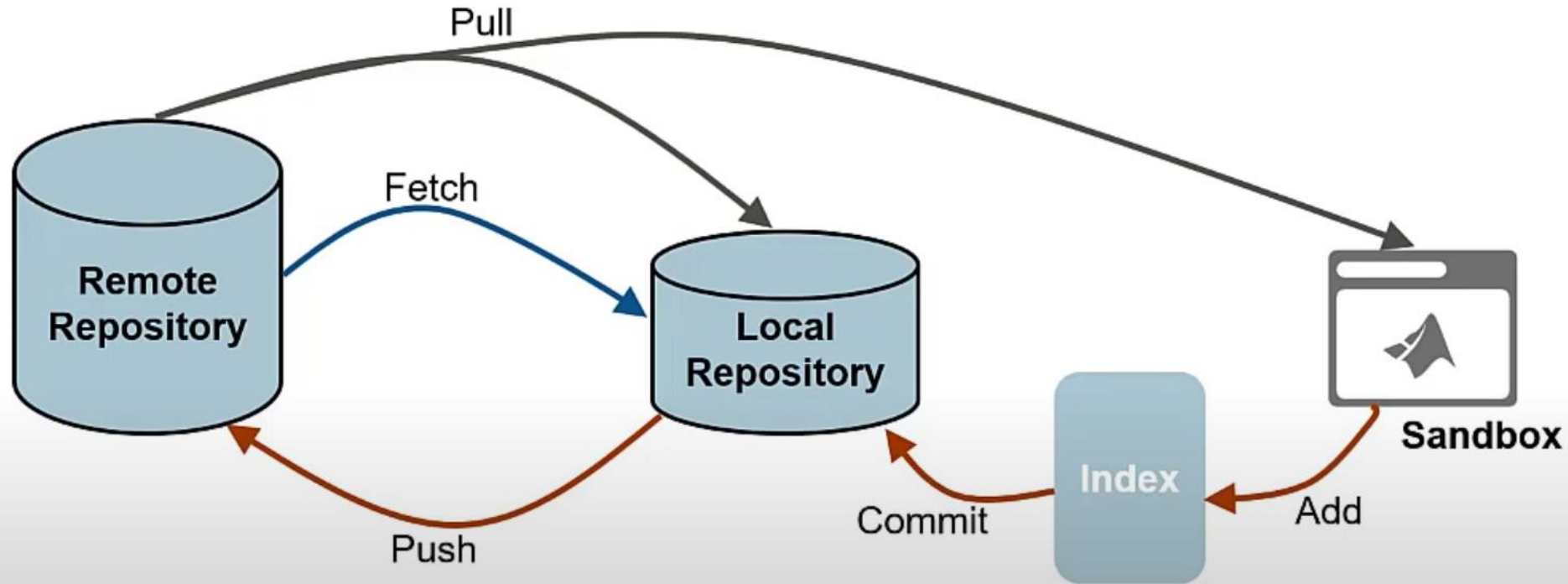
# Requirements

A GitHub Account

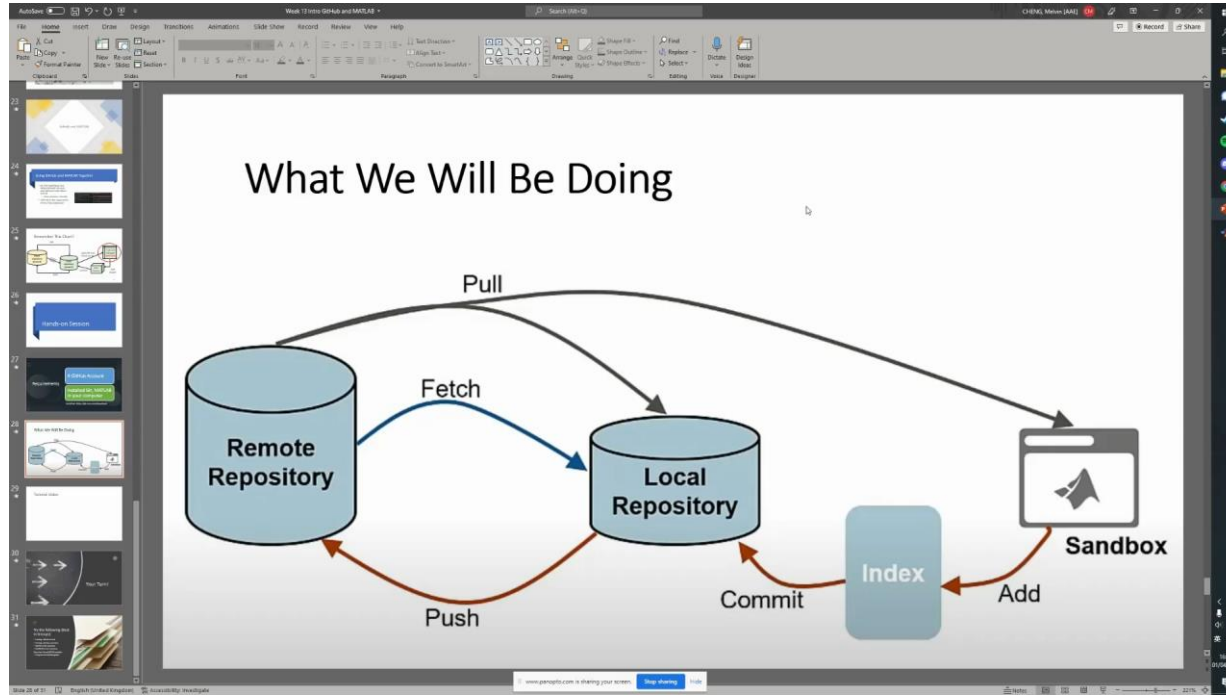
Installed Git, MATLAB  
in your computer

Install Git: <https://git-scm.com/downloads>

# What We Will Be Doing



# Tutorial Video





Your Turn!



## Try the following (Best in Groups):

- Creating a GitHub account
- Creating / Joining a repository
- Add files to the repository
- Modify files in the repository

If you have Git and MATLAB available:

- Using Git and MATLAB together

