

EECS 367 Lab

Git-ing started with Git

Administrative

Welcome to AutoRob!

Lots of information on the course website

<https://autorob.org>

Assignment #1: Path Planning

Due 11:59pm, Wednesday, September 16

Administrative

AUTOROB schedule kineval git assignments: 1 2 3 4 5 6 7

AutoRob

Introduction to Autonomous Robotics
Michigan EECS 367

Robot Operating Systems
Michigan ROB 511

Fall 2020

Flipped Classroom Hybrid COVID-19 Edition



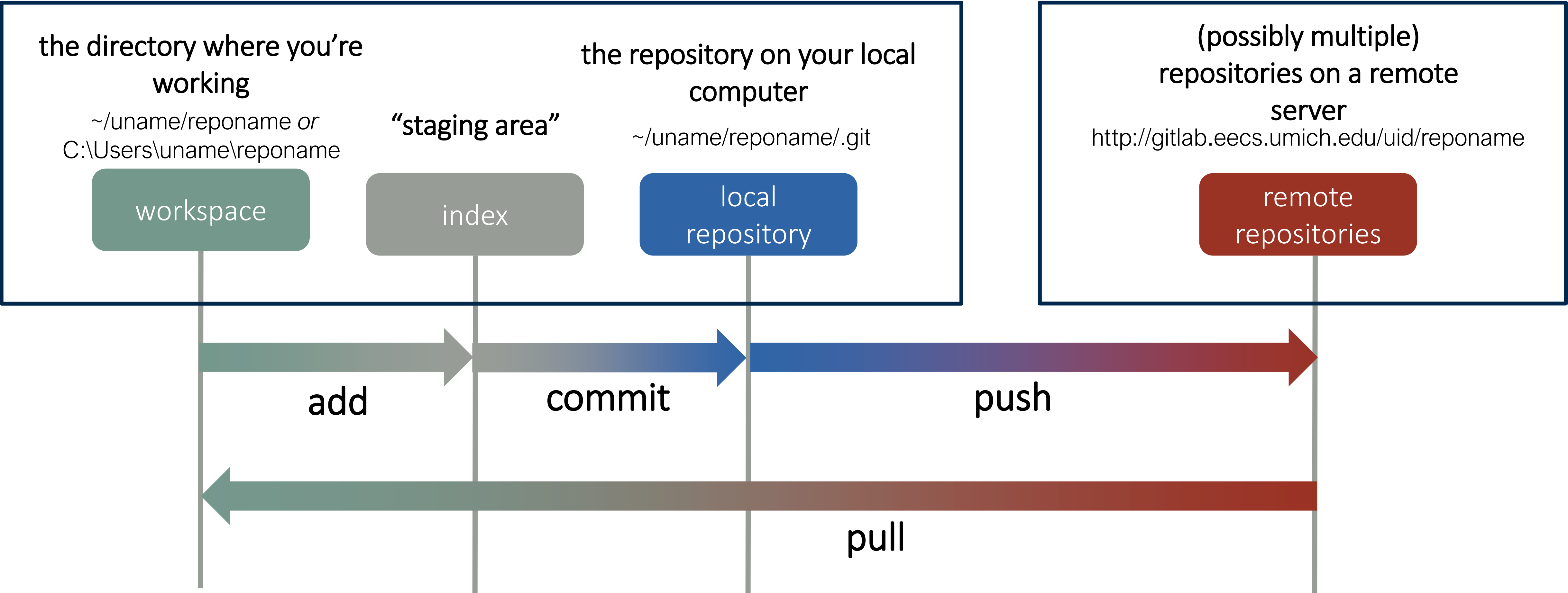
Lab Takeaways

1. Git initialization
 2. Clone KinEval stencil
 3. Make a change, commit, and push
 4. Practice with HTML
 5. Validate your changes
- * What we won't cover today: branching!

Git Process Overview

your local machine

the cloud



Step 1: Git Initialization

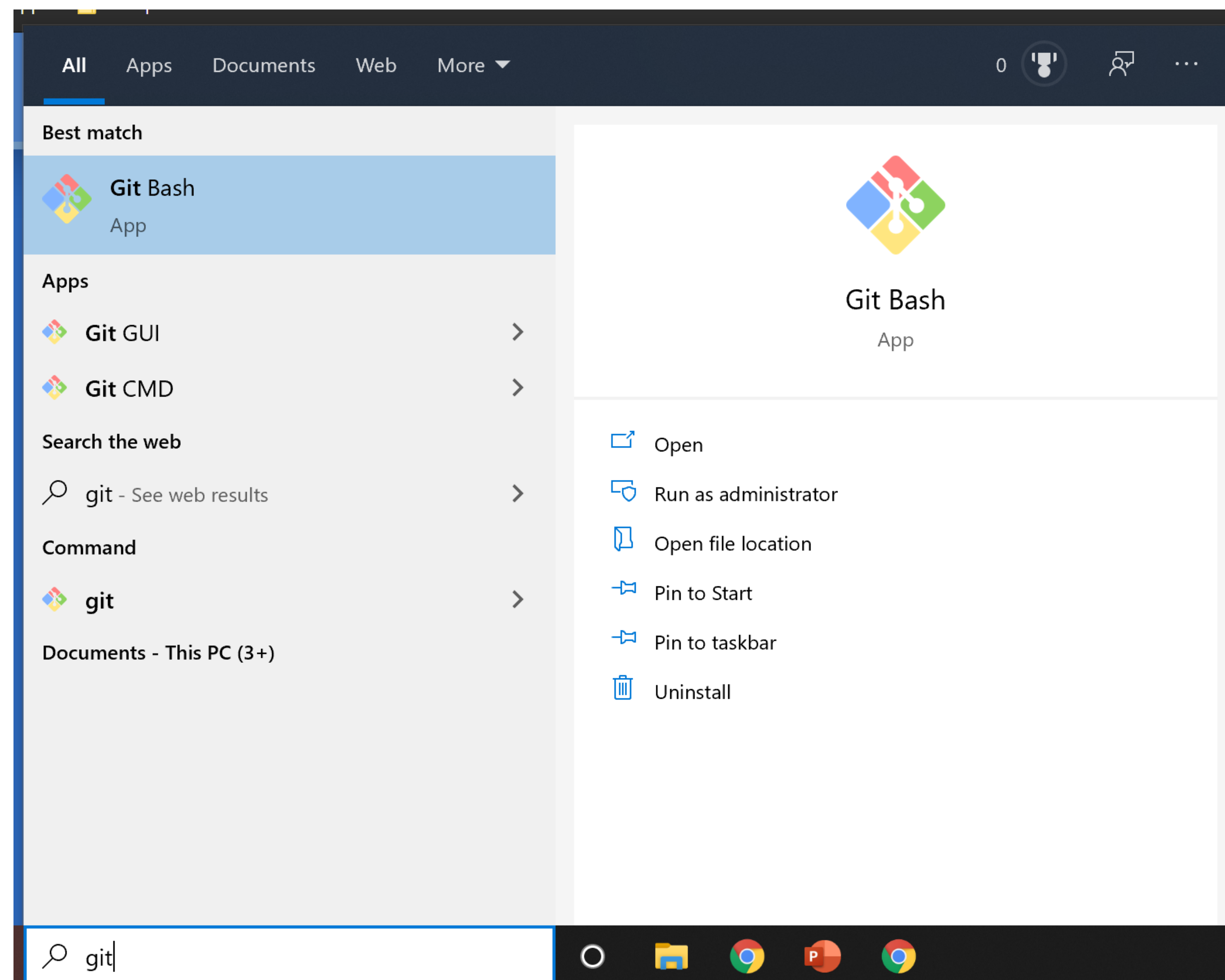
1. Install Git

<https://git-scm.com/book/en/v2/Getting-Started-Installing-Git>

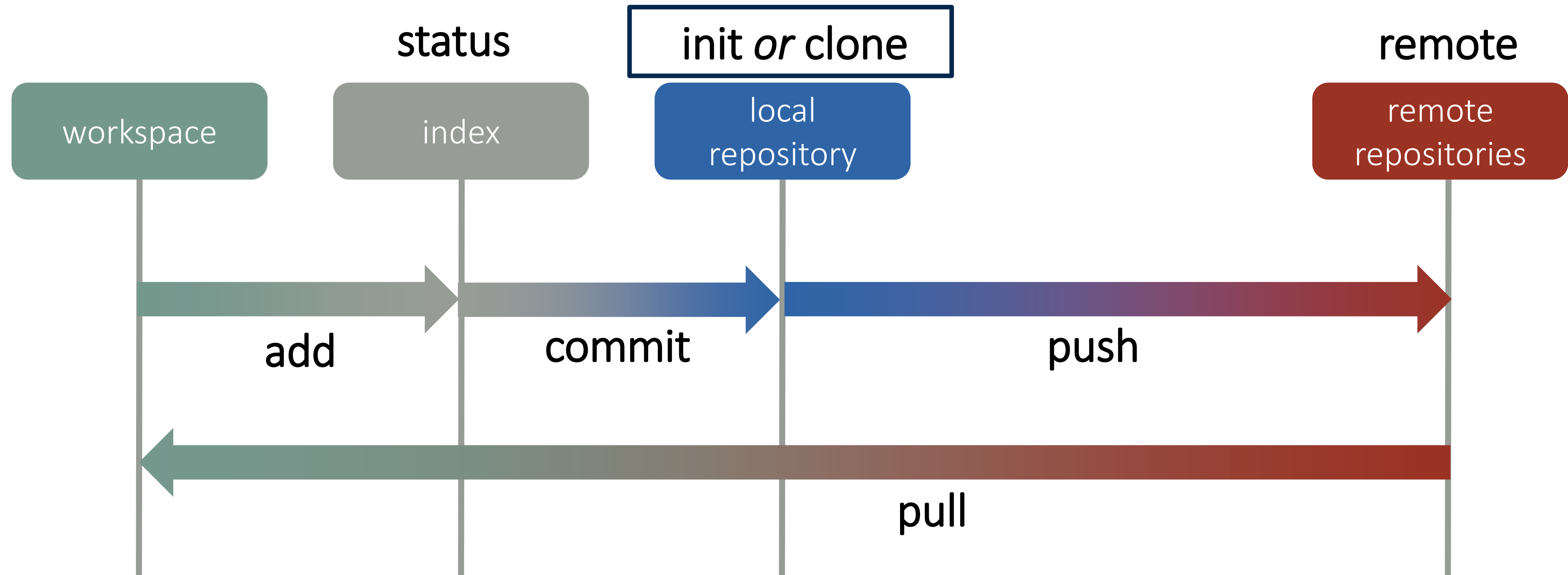
2. Create an empty private repository on GitHub, Bitbucket, or EECS GitLab

Step 1 Breakout Rooms

Get Your Terminal Ready



Basic Git Commands



Basic Git Commands

`git init`

start a new, blank repository in your working directory

`git clone <repo address>`

copy an existing repository from the cloud into your working directory

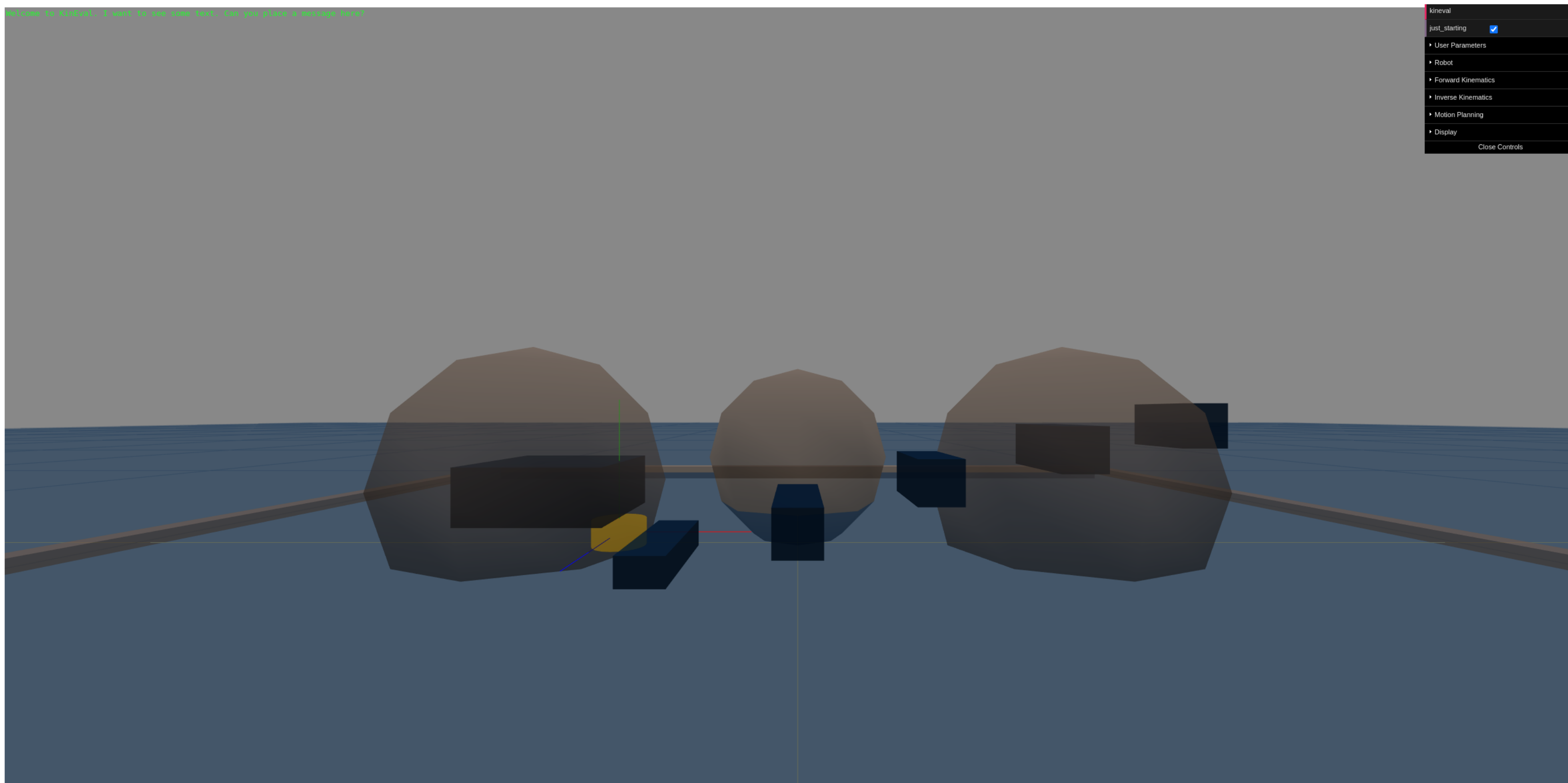
Step 2: Clone

1. Clone the autorob kineval-stencil repo
<https://github.com/autorob/kineval-stencil>
2. Open “home.html” and “project_pathplan/search_canvas.html” in a web browser to make sure stencil code runs properly

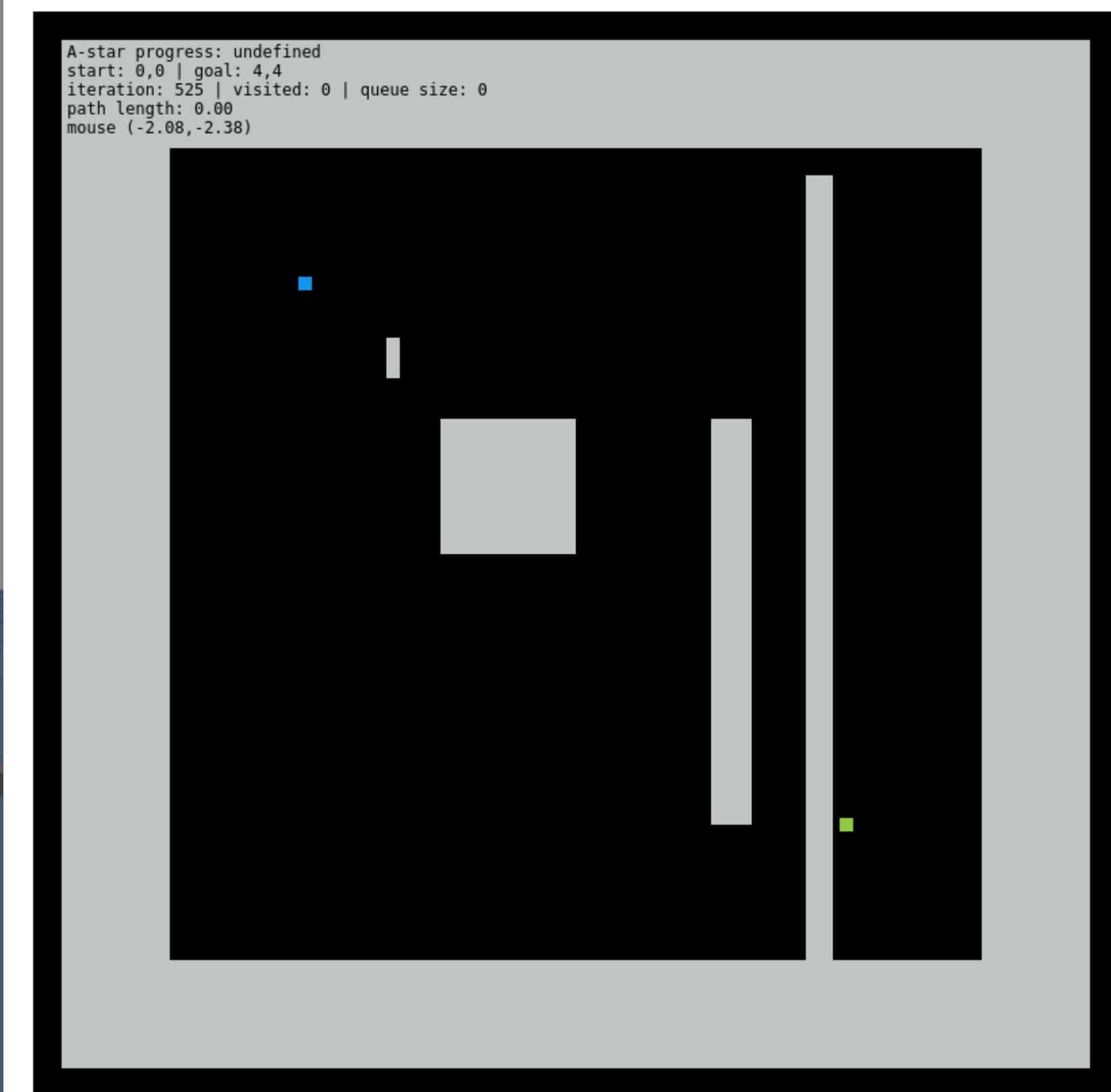
Step 2: Clone

```
File Edit View Search Terminal Help
ecat@saber: ~ $
git clone https://github.com/autorob/kineval-stencil.git
Cloning into 'kineval-stencil'...
remote: Enumerating objects: 16, done.
remote: Counting objects: 100% (16/16), done.
remote: Compressing objects: 100% (14/14), done.
remote: Total 211 (delta 3), reused 10 (delta 2), pack-reused 195
Receiving objects: 100% (211/211), 24.94 MiB | 4.19 MiB/s, done.
Resolving deltas: 100% (16/16), done.
ecat@saber: ~ $
ls
agents      Dropbox      Music        Public
autorob     emacs-soar-mode my_server    snap
bin          examples.desktop objective_modeling Soar
catkin_ws   experiments  old          soar_gazebo_docker
deps_ws     gripper.xcf  opt         timing_nums.ods
Desktop     instant_needles pathplan_iframe.html
Downloads   kineval-stencil Pictures
ecat@saber: ~ $
```

Step 2: Clone

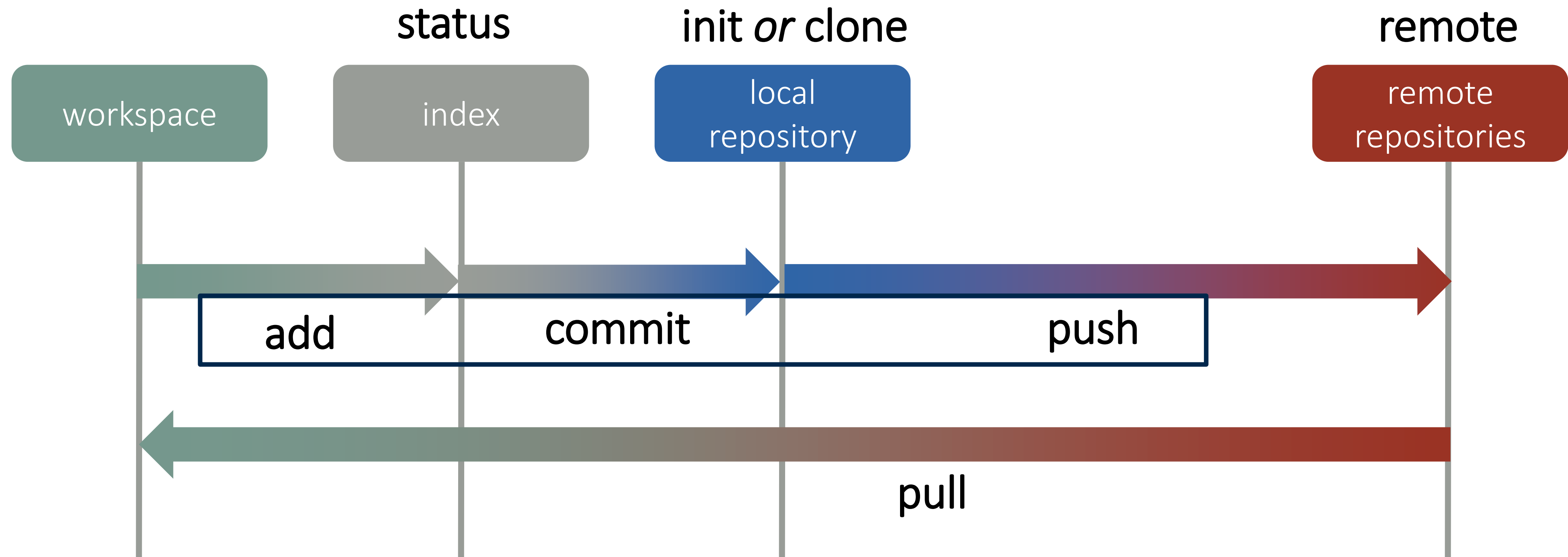


2D Search Canvas



Step 2 Breakout Rooms

Basic Git Commands



Basic Git Commands

```
git add <filename>
```

add a file to the index, a.k.a. “stage” it

```
git commit -m “message”
```

save all of the edits to the files currently in the index as a “commit”

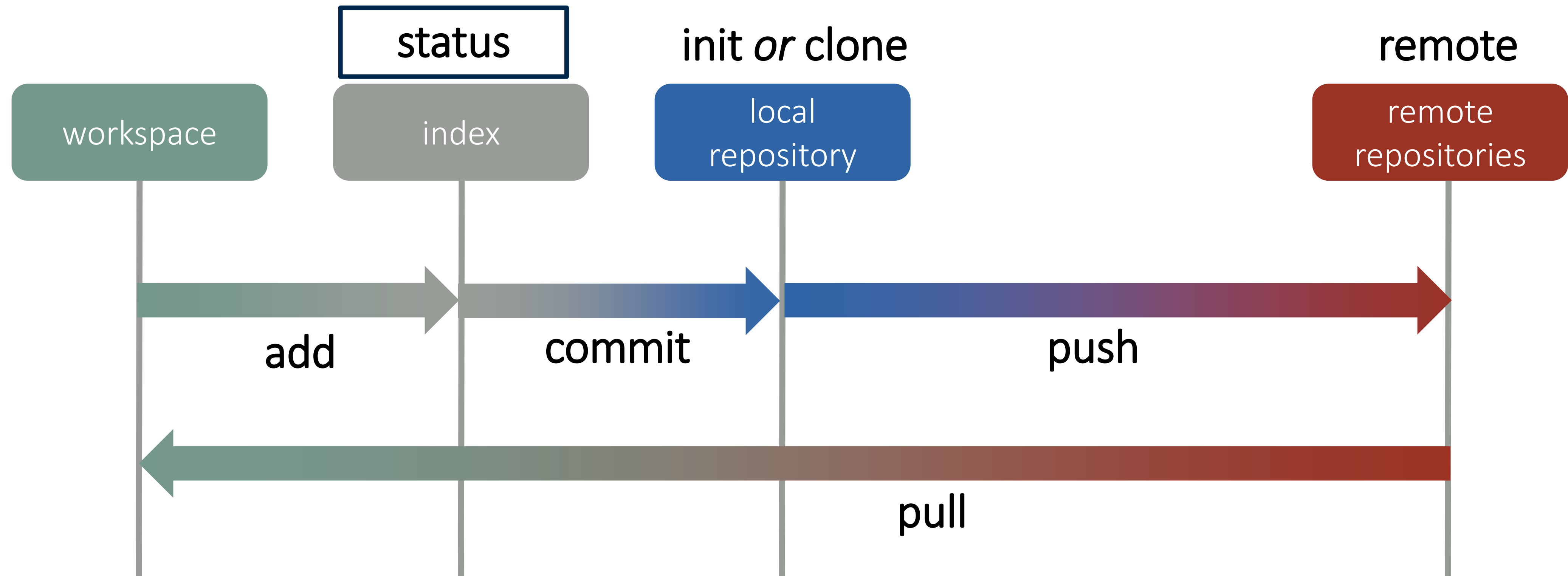
```
git push
```

push local changes to the default remote repository

```
git push <remote> <branch>
```

push local changes to a specific remote repository

Basic Git Commands

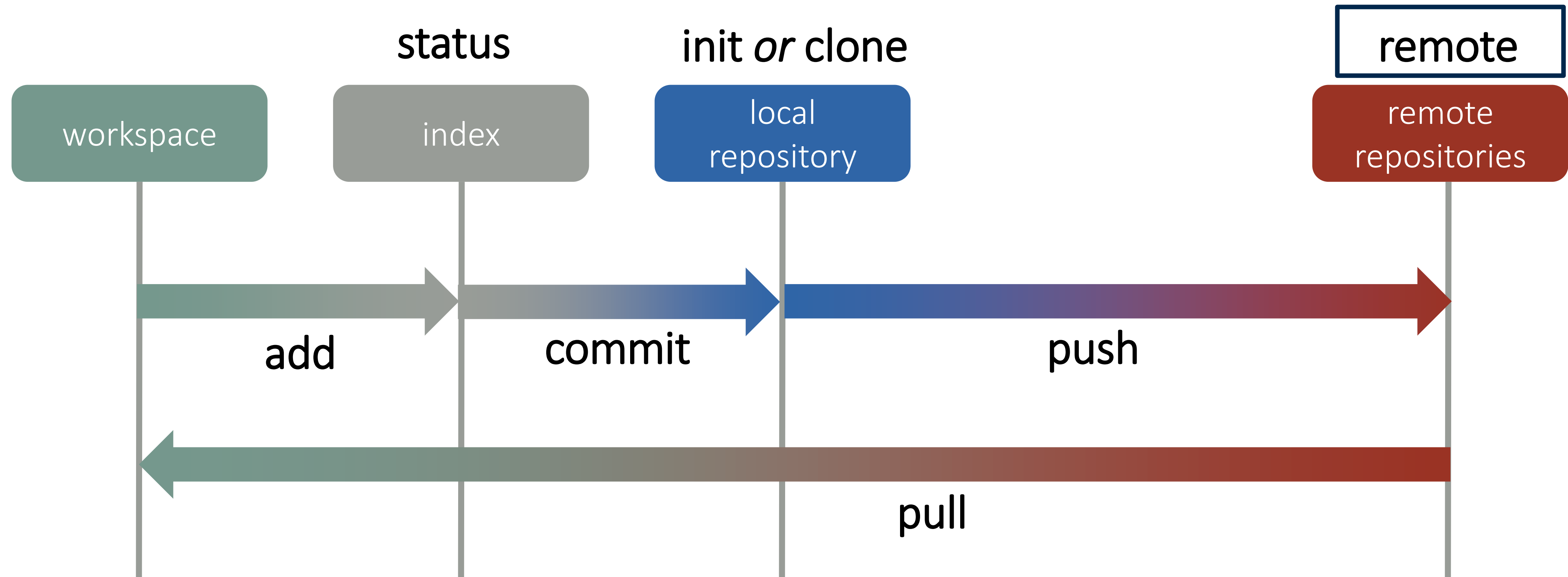


Basic Git Commands

`git status`

list which files in the workspace have been modified
and which have been added to the index

Basic Git Commands



Basic Git Commands

```
git remote -v
```

lists the addresses of your remote repositories

```
git remote add <name> <address>
```

adds a new remote

```
git remote rename <old-name> <new-name>
```

renames an existing remote

Basic Git Commands

“origin”

<http://gitlab.eecs.umich.edu/uid/reponame>

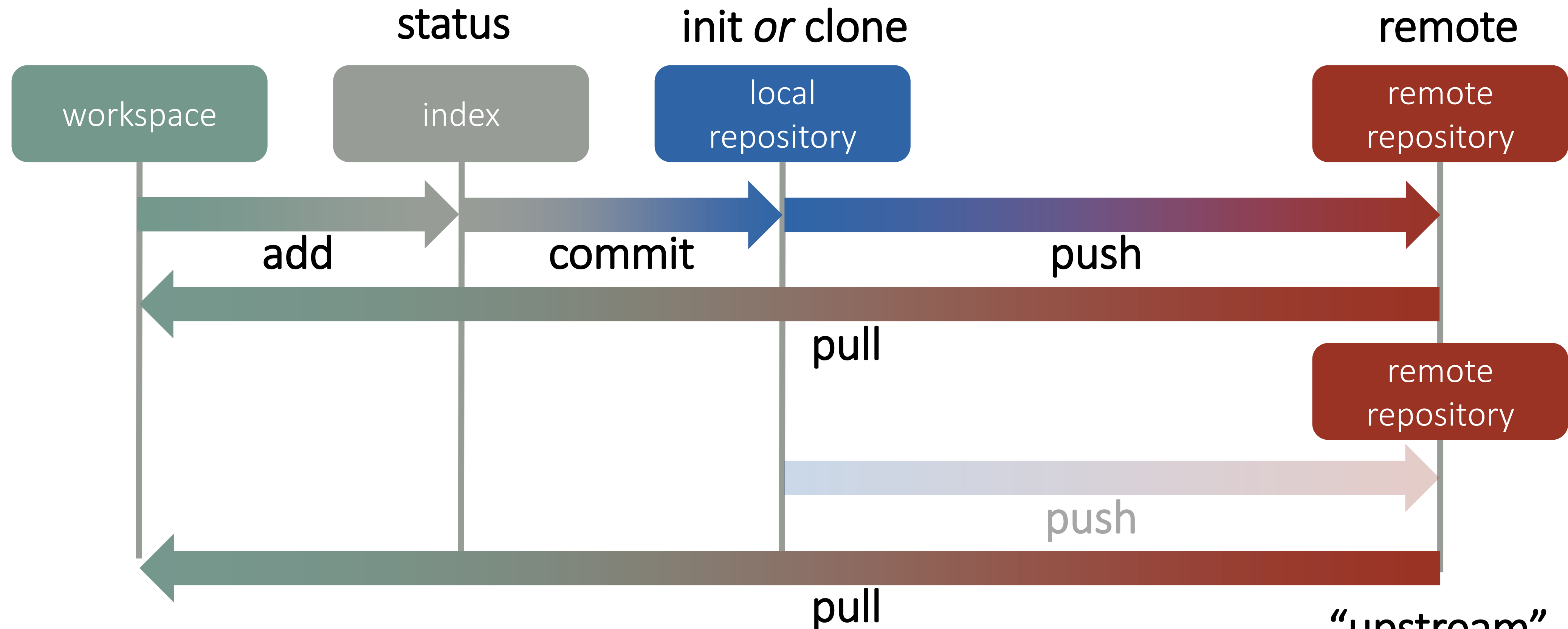
remote

remote
repository

remote
repository

“upstream”

<https://github.com/autorob/kineval-stencil.git>



Step 3: Commit + Push

1. Create kineval-stencil/me directory
2. Create me/me.html with just your name in the file
3. Add me/me.html to the index
4. Check the git status to see me.html in the index

Step 3: Commit + Push

```
File Edit View Search Terminal Help
ecat@saber: ~/kineval-stencil master $
ls me/
me.html
ecat@saber: ~/kineval-stencil master $
git add me/me.html
ecat@saber: ~/kineval-stencil master $
git status
On branch master
Your branch is up to date with 'origin/master'.

Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

    new file:   me/me.html

ecat@saber: ~/kineval-stencil master $
```

Step 3: Commit + Push

1. Create kineval-stencil/me directory
2. Create me/me.html with just your name in the file
3. Add me/me.html to the index
4. Check the git status to see me.html in the index
5. Make your first commit

Step 3: Commit + Push

```
File Edit View Search Terminal Help
ecat@saber: ~/kineval-stencil master $
git commit -m "Adds me.html"
[master 7a1bb1d] Adds me.html
1 file changed, 1 insertion(+)
create mode 100644 me/me.html
ecat@saber: ~/kineval-stencil master $
```

Step 3: Commit + Push

1. Create kineval-stencil/me directory
2. Create me/me.html with just your name in the file
3. Add me/me.html to the index
4. Check the git status to see me.html in the index
5. Make your first commit
6. Make your personal remote repository the “origin” and the autorob remote repository the “upstream”
7. Push your commit

Step 3: Commit + Push

* -u only
needed the
first time you
push!

```
File Edit View Search Terminal Help
ecat@saber: ~/kineval-stencil master $
git remote rename origin upstream
ecat@saber: ~/kineval-stencil master $
git remote add origin https://gitlab.eecs.umich.edu/mamantov/autorob_class.git
ecat@saber: ~/kineval-stencil master $
git push -u origin master
Username for 'https://gitlab.eecs.umich.edu': mamantov
Password for 'https://mamantov@gitlab.eecs.umich.edu':
Counting objects: 215, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (195/195), done.
Writing objects: 100% (215/215), 24.94 MiB | 1.44 MiB/s, done.
Total 215 (delta 18), reused 209 (delta 16)
remote: Resolving deltas: 100% (18/18), done.
To https://gitlab.eecs.umich.edu/mamantov/autorob_class.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.
ecat@saber: ~/kineval-stencil master $
```

Step 3: Commit + Push

* Only if you are not following along with the slides and cloned your own remote!

```
File Edit View Search Terminal Help

ecat@saber: ~/kineval-stencil master $
git remote -v
origin https://gitlab.eecs.umich.edu/mamantov/autorob_class.git (fetch)
origin https://gitlab.eecs.umich.edu/mamantov/autorob_class.git (push)
ecat@saber: ~/kineval-stencil master $
git remote add upstream https://github.com/autorob/kineval-stencil.git
ecat@saber: ~/kineval-stencil master $
git remote -v
origin https://gitlab.eecs.umich.edu/mamantov/autorob_class.git (fetch)
origin https://gitlab.eecs.umich.edu/mamantov/autorob_class.git (push)
upstream https://github.com/autorob/kineval-stencil.git (fetch)
upstream https://github.com/autorob/kineval-stencil.git (push)
ecat@saber: ~/kineval-stencil master $
```

Step 3 Breakout Rooms

Basic Git Commands

“origin”

<http://gitlab.eecs.umich.edu/uid/reponame>

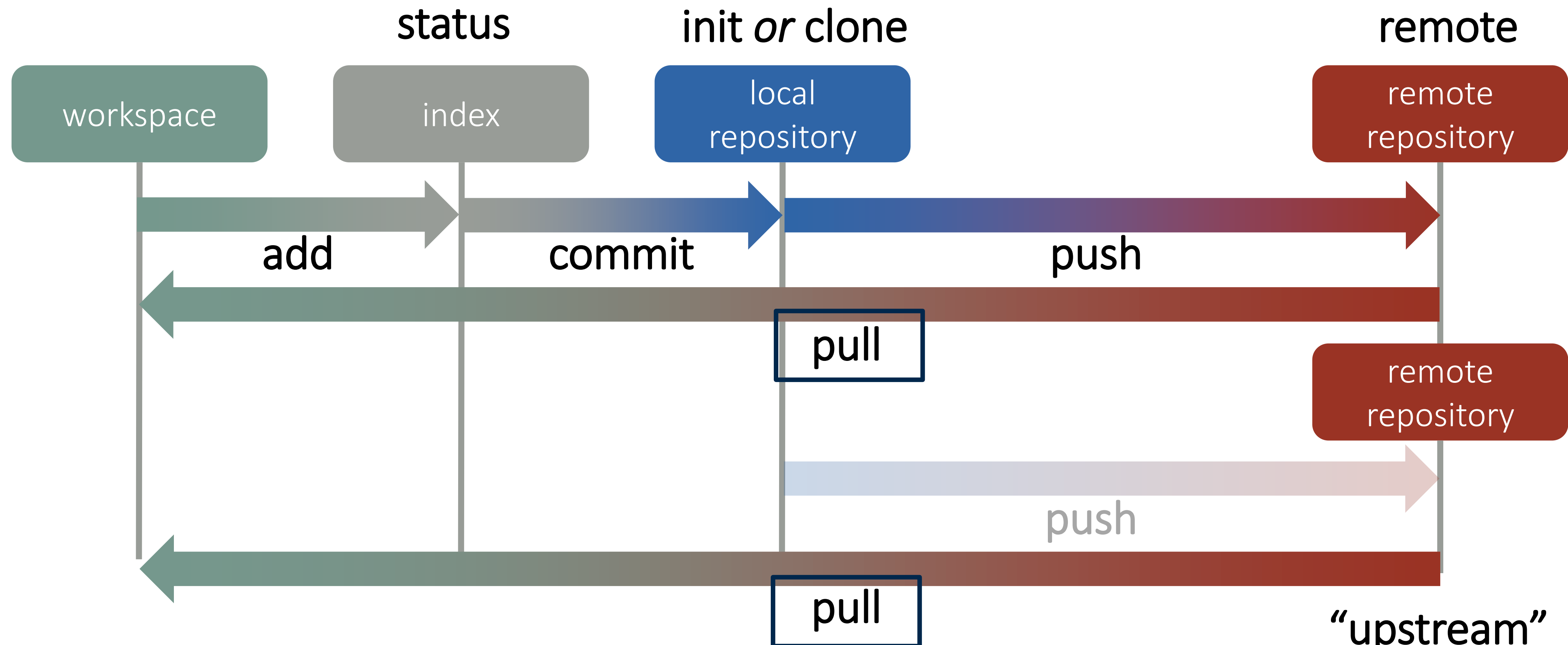
remote

remote
repository

remote
repository

“upstream”

<https://github.com/autorob/kineval-stencil.git>



Basic Git Commands

```
git pull
```

pull changes from the default remote into your local repository and workspace

```
git pull <remote> <branch>
```

pull changes from a specific remote into your local repository and workspace

Two Types of Pull

```
File Edit View Search Terminal Help
ecat@saber: ~/kineval-stencil master $
git pull
Username for 'https://gitlab.eecs.umich.edu': mamantov
Password for 'https://mamantov@gitlab.eecs.umich.edu':
Already up to date.
ecat@saber: ~/kineval-stencil master $
git pull upstream master
From https://github.com/autorob/kineval-stencil
* branch      master      -> FETCH_HEAD
Already up to date.
ecat@saber: ~/kineval-stencil master $
```


Step 4: HTML Practice

1. Copy a picture that best represents you to `kineval-stencil/me/me.png`
2. Add the following to `me/me.html`:

```

```

```
I am an awesome student. I'm most excited about:
```

```
<script>
```

```
console.log(Array(16).join("wat" - 1) + " Batman!")
```

```
</script>
```

3. Open `me/me.html` to see your photo

Step 5: Validate Changes

1. Commit and push your updates to me/me.html
2. Check the webpage of your remote repository to see your changes
3. Make sure you have added the course staff as collaborators on your remote repository:

GitHub: ohseejay, emgoeddel, zhezhou1993, cxt98

Bitbucket: ohseejay, emgoeddel, zhezhou, cxt98

EECS GitLab: ocj, mamantov, zhezhou, cxt

Steps 4+5 Breakout Rooms

Git Resources: Tutorials

1. Course website
[https://autorob.org/#git tutorial](https://autorob.org/#git_tutorial)
2. Bitbucket tutorials
<https://www.atlassian.com/git/tutorials>
3. Pro Git book
<https://git-scm.com/book/en/v2>
4. Learn Git Branching
<https://learngitbranching.js.org/>
5. Git Magic tutorial
<http://www-cs-students.stanford.edu/~blynn/gitmagic/>
6. The simple guide
<http://rogerdudler.github.io/git-guide/>

Git Resources: SSH Keys

Github:

<https://docs.github.com/en/github/authenticating-to-github/adding-a-new-ssh-key-to-your-github-account>

Bitbucket:

<https://support.atlassian.com/bitbucket-cloud/docs/set-up-an-ssh-key/>

GitLab:

<https://docs.gitlab.com/ee/ssh/>

* Setting up SSH keys allows you to push/pull without entering your password

Git Resources: Your Computer

```
git --help and git <command> -h
```