



Electrical Training

Week 3: GitHub and “Breadboard Arduino” Prototyping

Agenda

- GitHub
- “Breadboard Arduino” Prototyping

GitHub





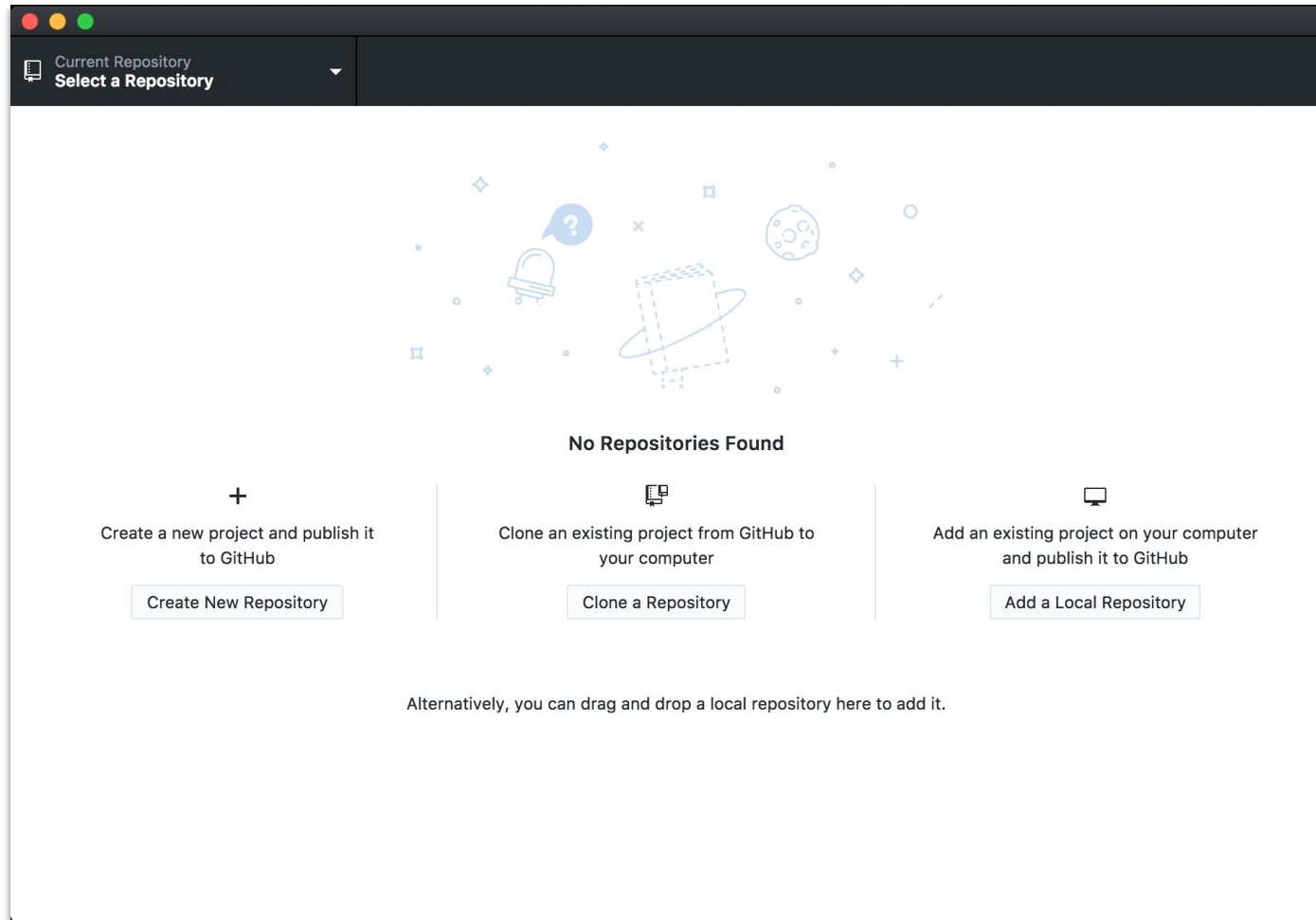
GitHub

- Version control service that uses Git
 - Tracks changes made to files in a **repository**
- You can update the version of the files locally by **committing** them
- You can prototype by creating a **branch** from a project
- Once you are done testing your branch, you can **merge** it with the **master branch** (this is known as a **pull** request)

Getting Started

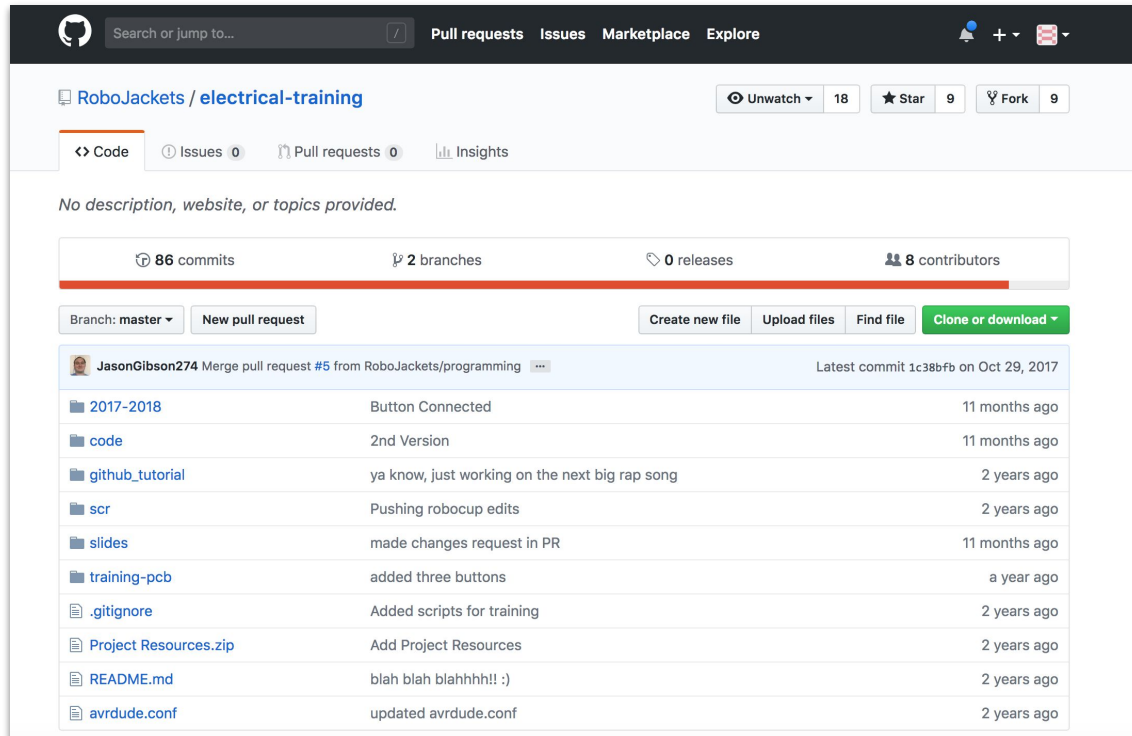
- Sign Up
 - <https://github.com/join>
- Download Desktop Client
 - <https://desktop.github.com>

Desktop Client



Navigate to the Repo

<https://github.com/RoboJackets/electrical-training>



The screenshot shows the GitHub interface for the repository `RoboJackets / electrical-training`. The repository has 18 Unwatch, 9 Stars, and 9 Forks. The main content area shows the repository's commit history and file list. The commit history is filtered by the `master` branch, showing 86 commits. The file list includes:

File	Description	Time
2017-2018	Button Connected	11 months ago
code	2nd Version	11 months ago
github_tutorial	ya know, just working on the next big rap song	2 years ago
scr	Pushing robocup edits	2 years ago
slides	made changes request in PR	11 months ago
training-pcb	added three buttons	a year ago
.gitignore	Added scripts for training	2 years ago
Project Resources.zip	Add Project Resources	2 years ago
README.md	blah blah blahhhh!! :)	2 years ago
avrdude.conf	updated avrdude.conf	2 years ago

Cloning

- Copies the repository to your local machine
- Go to the repo and click the “Clone or Download” button
 - Should bring up the Desktop Client
- You have to choose a file path for your files to be cloned to

Cloning to Desktop App

Search or jump to... Pull requests Issues Marketplace Explore

RoboJackets / electrical-training

Unwatch 18 Star 9 Fork 9

Code Issues 0 Pull requests 0 Insights

No description, website, or topics provided.

86 commits 2 branches 0 releases 8 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

JasonGibson274 Merge pull request #5 from RoboJackets/programming

2017-2018	Button Connected	
code	2nd Version	
github_tutorial	ya know, just working on the next big rap song	
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Clone with SSH ? Use HTTPS

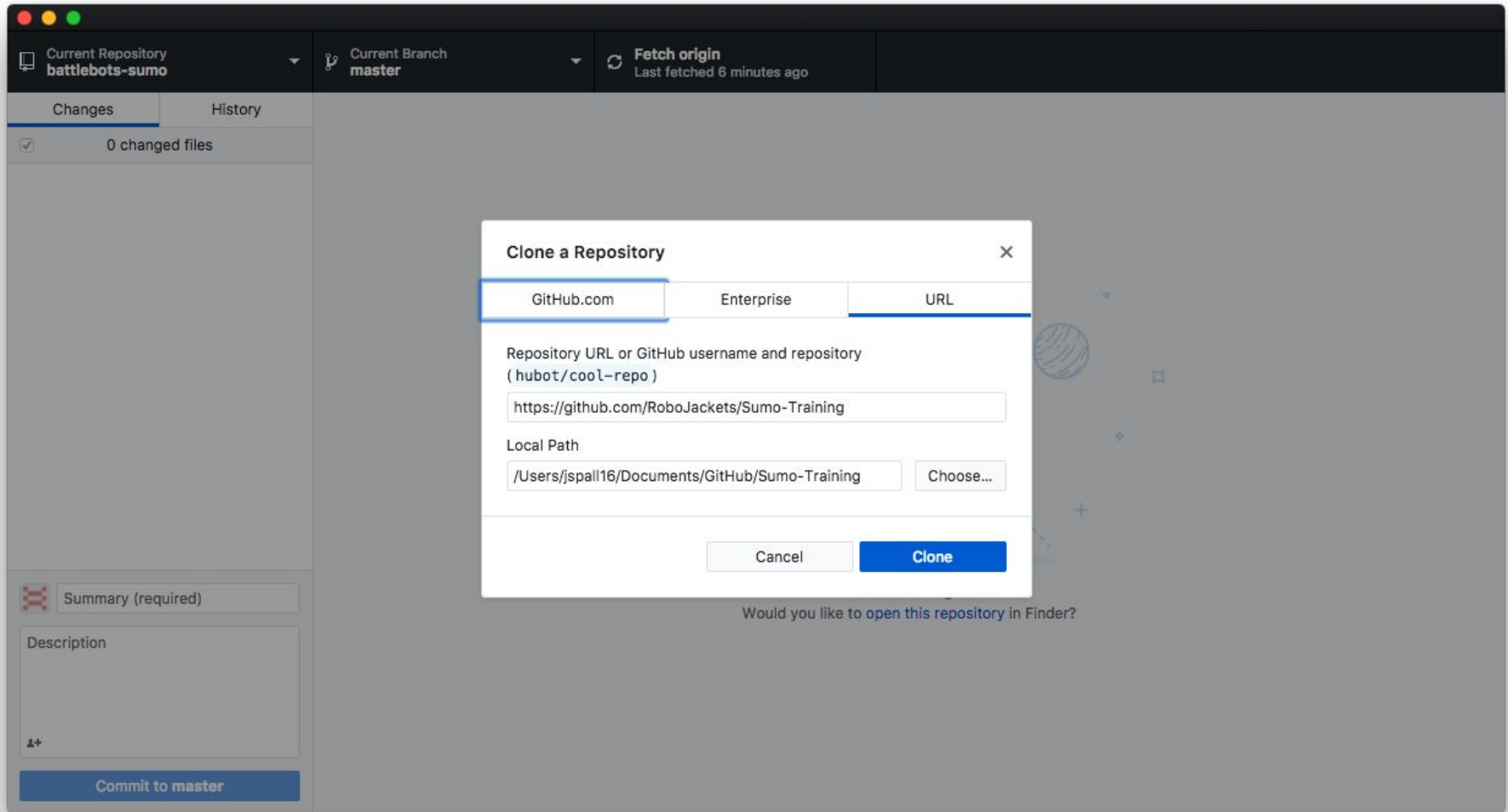
Use an SSH key and passphrase from account.

git@github.com:RoboJackets/electrical-tr

Open in Desktop Download ZIP

Clone RoboJackets/electrical-training to your computer and use it in GitHub Desktop.

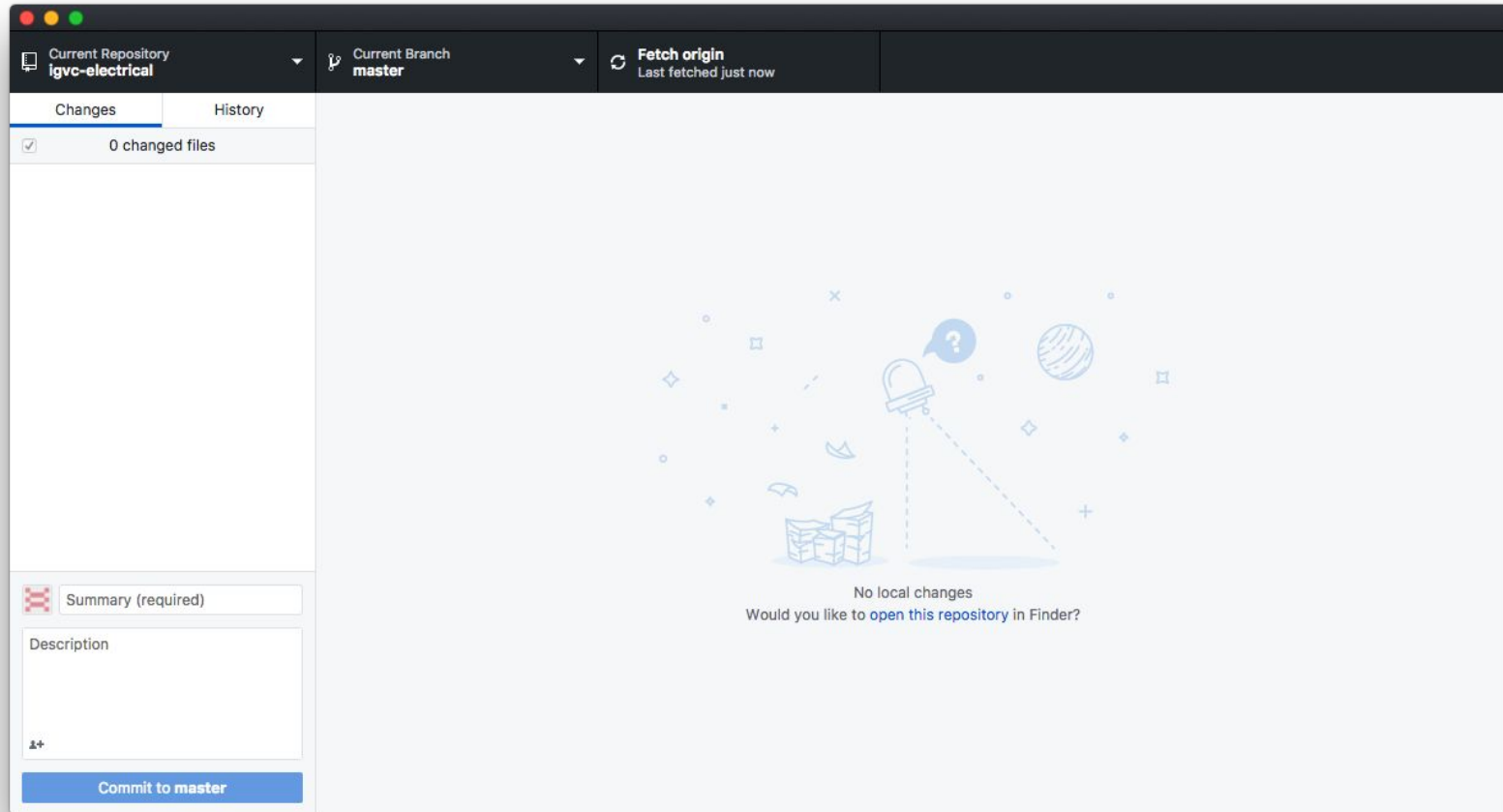
Setting File Path



Navigating the Repo

- Once cloned, the desktop client will show either of two views
- “Changes”
 - The currently modified elements of your files on your local machine
 - Lines that are green are additions
 - Lines that are red are removals
- “History”
 - The previous commits and content of changes

No Current Changes



Changes

Current Repository: **roboracing-firmware**

Current Branch: **promicro-controller**

Fetch origin (Last fetched just now)

Changes (1) | History

1 changed file

- sedani/brake.../brake_testing.ino

Update sedani/brake_testing/brake_testing.ino

Description

Commit to promicro-controller

sedani/brake_testing/brake_testing.ino

Line	Old	New
		@@ -6,6 +6,7 @@ const int accelButtonPin = 5;
6	6	const int decelPotPin = A0;
7	7	const int stopPotPin = A1;
8	8	const int backwardsPotPin = A2;
		+const int enablePin = 7;
9	10	
10	11	
11	12	// Values
		@@ -16,6 +17,7 @@ float decelTime = 0;
16	17	float stopTime = 0;
17	18	float backwardsTime = 0;
18	19	bool accelButtonValue = false;
		+bool enableValue = false;
19	21	int accelPwm = 1600;
20	22	int backPwm = 1300;
21	23	int stopPwm = 1500;
		@@ -28,6 +30,7 @@ void setup() {
28	30	pinMode(stopPotPin, INPUT);
29	31	pinMode(backwardsPotPin, INPUT);
30	32	pinMode(accelButtonPin, INPUT);
		+ pinMode(enablePin, INPUT);
31	34	pinMode(escPin, OUTPUT);
32	35	esc.attach(escPin);
33	36	Serial.begin(9600);
		@@ -35,31 +38,39 @@ void setup() {
35	38	
36	39	void loop() {
37	40	accelButtonValue = digitalRead(accelButtonPin);

History

Current Repository
lgvc-electrical

Current Branch
master

Fetch origin
Last fetched a minute ago

Changes

History

Select Branch to Compare...

Delete c_cpp_properties.json
Ryan Waldheim committed 6 days ago

Delete settings.json
Ryan Waldheim committed 6 days ago

added discrete library
Ryan Waldheim committed Sep 30, 20...

Merge pull request #18 from baranus...
Ryan Waldheim committed Sep 27, 20...

fix radio pins, add labels
Mark Faingold committed Sep 23, 2018

Merge https://github.com/RoboJack...
Baran Usluel committed Aug 29, 2018

Remove toggle mode in estop
Mark Faingold committed Apr 22, 2018

Remove serial, fix delay in estop code
Mark Faingold committed Apr 15, 2018

Revise estop code
Baran Usluel committed Apr 15, 2018

Minor grammar changes
Cryptum169 committed Apr 13, 2018

Motor board spec sheet first draft

Minor grammar changes

Cryptum169 committed 1450297 3 changed files

motorboa.../Motor_Board_Specs.pdf	43	43	@@ -43,15 +43,15 @@
motorboar.../Motor_Board_Specs.tex	44	44	\pagebreak
motorboard.../c_cpp_properties.json	45	45	\section{0verview}
	46		-This document explained the function of the Motor and Light Control Board (referred as \emph{motor board} in the following) on \textbf{RoboJackets} IGVC subteam robot \textbf{Jessi} in the year 2017 - 2018 and showed how the board is designed with regards to its need, capability and limitation. This document is created in the hope that future RJ members can have a good understanding of the robot without unnecessary effort such as staring into void and cursing whoever did the board without leaving a documentation. \vspace{6pt}\\
	47		-The motor board is the interface between Jessi's software control and her motor. IGVC software team completes path-planning on the two onboard Intel NUC computing units and will send command to the motor board. The motor board will tune the value according to PID and encoder value and then send it to the sabertooth motor controller, which will eventually power the motor.\\
	46		+This document explained the function of the Motor and Light Control Board (referred as \emph{motor board} in the following) on \textbf{RoboJackets} IGVC subteam robot \textbf{Jessi} in the year 2017 - 2018 and showed how the board is designed with regards to its need, capability and limitation. This document is created in the hope that future RJ members can have a good understanding of the robot without unnecessary effort such as staring into the void and cursing whoever did the board without leaving a documentation. \vspace{6pt}\\
	47		+The motor board is the interface between Jessi's software control and her motor. IGVC software team completes path-planning on the onboard Intel NUC computing unit and will send driving command to the motor board. The motor board will tune the value according to PID and encoder value and then send it to the sabertooth motor controller, which will eventually power the motor.\\
	48	48	\begin{figure}[h]
	49	49	\centering

Editing

- Before you start editing, remember to Pull the newest version of the repository
 - Button in the top right with the sync icon
- Edit the files like normal
-

Edits

Current Repository
Sumo-Training

Current Branch
master

Fetch origin
Last fetched 3 minutes ago

Changes 1

History

E-training/E-Training_LabA_samples/LabAPart1_sample/LabAPart1_sample.ino

1 changed file

E-trainin.../LabAPart1_sample.ino

		@@ -1,3 +1,5 @@
	1	+int delayTime = 1000;
	2	+
1	3	void setup() {
2	4	// put your setup code here, to run once:
3	5	
		@@ -8,7 +10,7 @@ void loop() {
8	10	// put your main code here, to run repeatedly:
9	11	
10	12	digitalWrite(LED_BUILTIN, HIGH); // turn the LED on (HIGH is the voltage level)
11	13	- delay(1000); // wait for a second
		+ delay(delayTime); // wait for a second
12	14	digitalWrite(LED_BUILTIN, LOW); // turn the LED off by making the voltage LOW
13	15	- delay(1000); // wait for a second
		+ delay(delayTime); // wait for a second
14	16	}

Added a variable time for LabAPe

Changed the delay time to be a variable instead of a constant

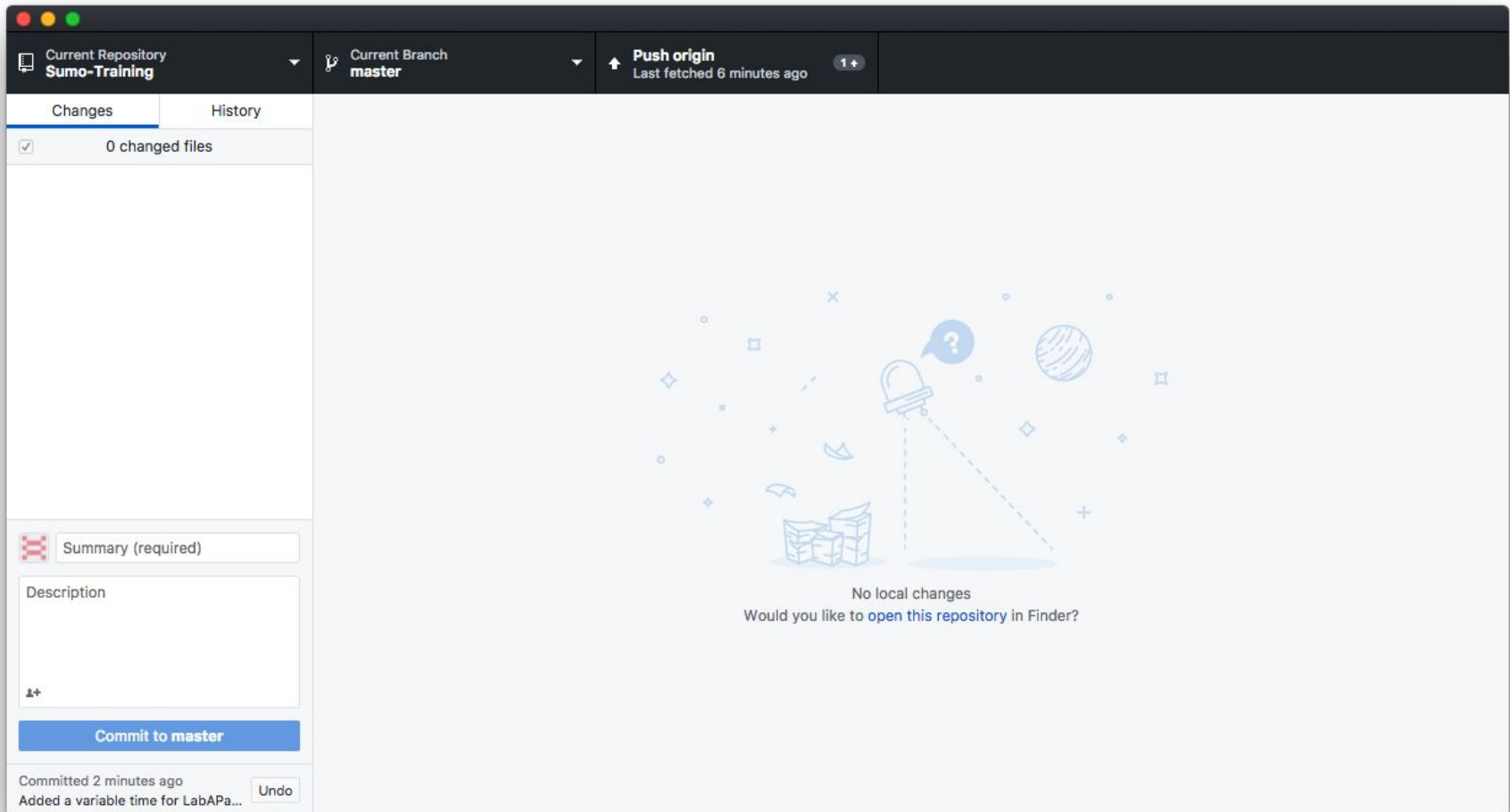
1+

Commit to master

Committing and Pushing

- Once finished editing, commit the changes
 - Click the blue “Commit” button on the bottom of the screen
 - Remember to give a summarizing title and a description of the changes you have made
- After committing, push the changes to the online repository
 - Button in the top right that says “Push...”

Pushing



Result

- After pushing the changes, they will appear in the branch you were editing
- Everyone else can pull your current changes

RoboJackets/electrical-tr

This is a summary of my

GitHub, Inc. [US]https://github.com/RoboJackets/electrical-training/commit/1e7d50067f2732ee9ba3c3261e971ba1d3bfc22c

Search

Pull requests

Issues

Gist

Unwatch

12

Unstar

4

Fork

1

Code

Issues0

Pull requests0

Projects0

Pulse

Graphs

Settings

This is a summary of my changes

Browse files

I dropped in some sick beatz

master

danbudanov committed a minute ago

1 parent b6031d6 · commit 1e7d50067f2732ee9ba3c3261e971ba1d3bfc22c

Showing 1 changed file with 2 additions and 0 deletions.

Unified

Split

2 github_tutorial/file.txt

View

... -1,6 +1,8 @@

1 1 Files

2 2 ft. Evan P

3 3

4 4 +Beat: https://www.youtube.com/watch?v=Bad46A7tvnI

5 5 +

4 6 This is a file

5 7 A file is this

6 8 Github is fun

0 comments on commit 1e7d500

Lock conversation

Write

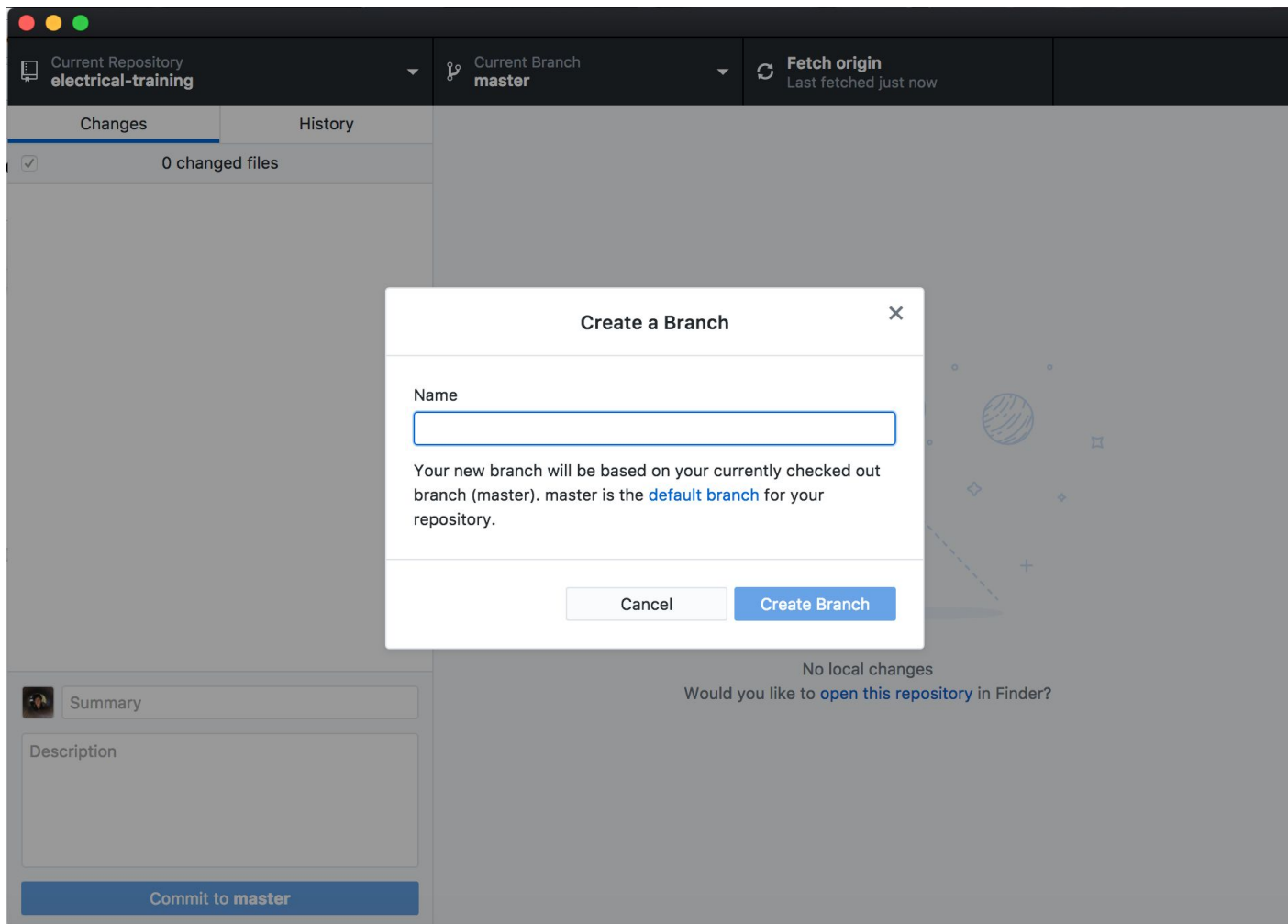
Preview

AA B i “ > < @

Leave a comment

Creating Branches

- If someone else is making changes at the same time, you do not want to commit over each other
- Branches let you work off of the same original base and combine changes
 - In the Desktop client, click the middle dropdown and click “New Branch”
 - Choose a name for the branch and click “Create Branch”




Pull Requests


- After finishing the changes on your current branch, combine them with “Pull Requests”
- In the web client, click the “New Pull Request” button
- The compare branch is what you are changing
- The base branch is what you are merging into

Example of Pull Request

Open a pull request

Create a new pull request by comparing changes across two branches. If you need to, you can also [compare across forks](#).

 base: master ← compare: Test-branch ✓ **Able to merge.** These branches can be automatically merged.



Updated README

Write

Preview

AA B i “ > < > ☰ ☷ ☹ @ 🚩 ↶

Leave a comment


Attach files by dragging & dropping, [selecting them](#), or pasting from the clipboard.

MD Styling with Markdown is supported

Create pull request

Reviewers

Suggestions

 **petersonev** [Request](#)

Assignees

No one—assign yourself

Labels

None yet

Milestone

No milestone



Pull request created

Awesome work!

[View it on GitHub](#)

Merging Pull Requests

- After a Pull Request is made, it can be merged into the branch
- Pull Requests are for reviewing, Merging is for the actual combination
- If there are not any conflicts (different changes on the same file), it can be merged and the old branch can be deleted

Merging Requests

Updated README #8

[Edit](#)

 **Open** jspall0327 wants to merge 1 commit into `master` from `Test-branch`

 Conversation 0

 Commits 1

 Checks 0

 Files changed 1

+1 -1 



jspall0327 commented just now

Member

+  ...

No description provided.

  Updated README

d451c1a

Add more commits by pushing to the `Test-branch` branch on `RoboJackets/electrical-training`.



This branch has no conflicts with the base branch

Merging can be performed automatically.

Merge pull request



You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

Reviewers



Suggestions

 **petersonev**

[Request](#)

Assignees



No one—assign yourself

Labels



None yet

Milestone



No milestone

Notifications

Final Merge Documentation

Add more commits by pushing to the `example-branch` branch on RoboJackets/electrical-training.



Merge pull request #2 from RoboJackets/example-branch

Added sweet new lines

Confirm merge

Cancel



Write

Preview

AA B i

“ ”

< >

🔗

☰

☰

☑

↩

@

★

Milest

No mil

Assign

No one

1 parti



Notific



You're

Completed Merge and Deleted Branch

Pull request successfully merged and closed

You're all set—the `example-branch` branch can be safely deleted.

 Delete branch

“Breadboard Arduino” Prototyping



Worksheet

- Breadboard out a working Arduino using the chips on the official boards
- Follow the worksheet and ask the instructors for assistance