

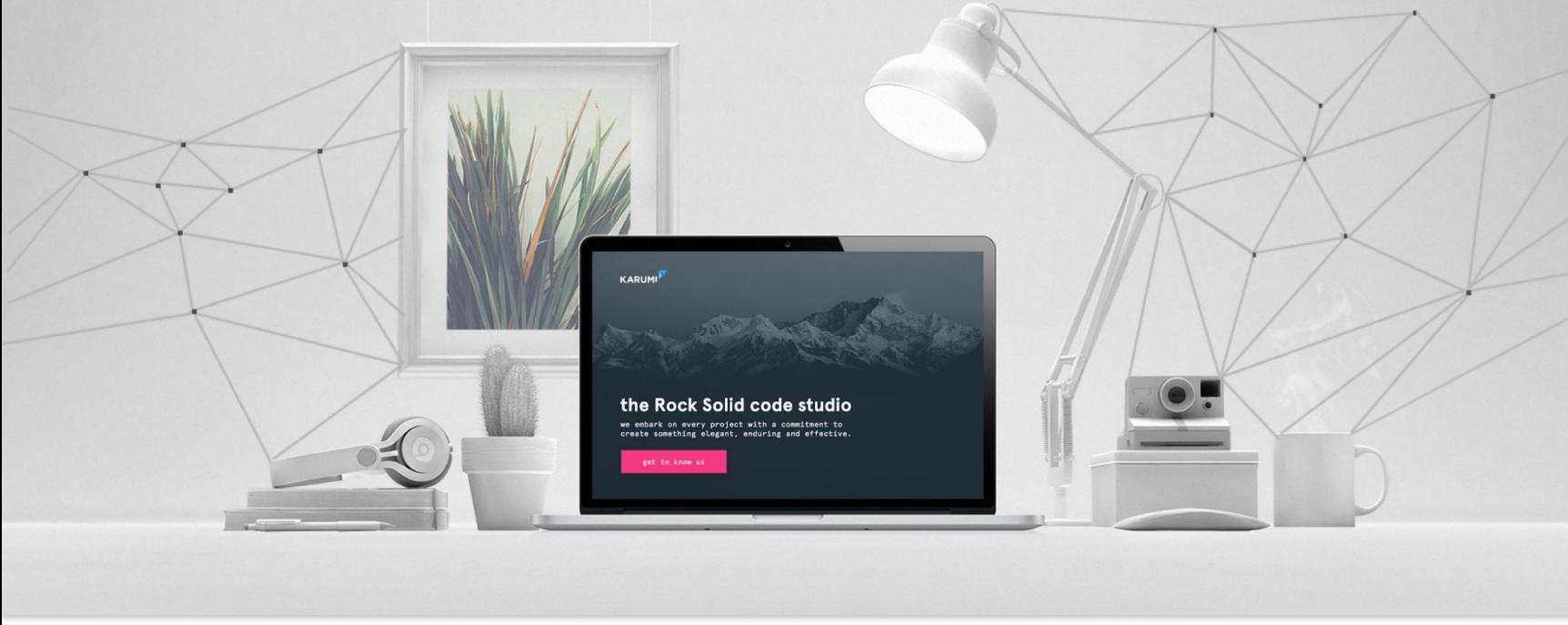


# Version Control Systems for Researchers

Pedro Vicente Gómez Sánchez

Senior Software Engineer at Karumi

pedro@karumi.com  
@pedro\_g\_s  
github.com/pedrovgs



## Karumi is the Rock Solid code software development studio.

We embark on every project with a commitment to create something elegant, enduring and effective. That is our heartbeat.

Our approach is uniquely simple and honest, we are a small dedicated software studio, delivering outstanding work.



Sergio Gutierrez  
Senior Software Engineer

Fran Fernández  
Senior Software Engineer

Antonio López  
Senior Software Engineer

Jorge Barroso  
GDE and Co-Founder

Davide Mendolia  
CTO and Co-Founder

# **What's a version control system?**



Software used to manage the different versions  
and the changes of our files over the time.



Administrative documents	▶	Version 1	▶
Clustering	▶	Version 2	▶
Logistic Regression	▶	Version 3	▶
Multivariate Functional Data	▶	Version 4	▶
Variable Selection	▶	Version 4 revised by Richard	▶
		Version 5	▶
		Version 5 referee corrections	▶
		Version 6 FINAL	▶
		Version 7	▶
		Version 7_2	▶



## Version history of 'IMG\_0362.jpg'

Dropbox keeps a snapshot every time you save a file. You can preview and restore 'IMG\_0362.jpg' by choosing one of the versions below:

<a href="#">Version 7</a> (current)	Edited by Geoff Akerlund ( geoff-virtualpc )	3 mins ago	1.55 MB
<input type="radio"/> <a href="#">Version 6</a>	Edited by Geoff Akerlund ( geoff-virtualpc )	25 mins ago	1.55 MB
<input type="radio"/> <a href="#">Version 5</a>	Edited by Geoff Akerlund ( geoff-virtualpc )	41 mins ago	1.55 MB
<input checked="" type="radio"/> <a href="#">Version 4</a>	Edited by Geoff Akerlund ( geoff-virtualpc )	42 mins ago	1.55 MB
<input type="radio"/> <a href="#">Version 3</a>	Edited by Geoff Akerlund ( geoff-virtualpc )	44 mins ago	1.55 MB
<input type="radio"/> <a href="#">Version 2</a>	Edited by Geoff Akerlund ( geoff-virtualpc )	44 mins ago	1.55 MB
<input type="radio"/> <a href="#">Version 1</a> (oldest)	Added by Geoff Akerlund ( geoff-virtualpc )	11/6/2013 4:19 PM	3.02 MB

[Restore](#)

[Cancel](#)



✓ master			Get the cities sections html ready	5 days ago
			Get the new section css shining	
			Add the content needed for the second section	
			Meals section finished	6 days ago
			Start working on the meals section	
			Get the first section ready and working	
			Start working on the sections	
			Update project readme	
			Navigation bar finished	
			Ignore vendor files	
			Improve the header. Let's go for the navigation bar	
			Create a header skeleton	
			Start working with normalizer, styles and our first steps to build omnifood site	a week ago
			Add some resources we will use in the future for the exercises	2 weeks ago
			Move the first exercise to its own folder	
			Update project readme	3 weeks ago
			Add live-server and update the project documentation	

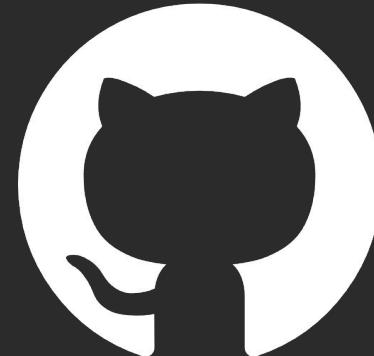


# **What are we going to do today?**



# What are we going to do today?

- Learn the basics of Git.
- Learn how to use GitKraken and GitHub.



# At the end of the workshop I'll be able to...

- Manage the different versions of my papers or software based projects.
- Create a private repository to store my repositories for free in the cloud.
- Review the history of my project.
- Compare different versions of my projects between different dates.
- Collaborate with other researchers easily.



# Vocabulary



# Vocabulary

- Repository: Project we want to version.
- Commit: A point of the history we want to save.
- History: Set of commits sorted by date I can use to move around.
- Pull request: Collaboration request.
- Branch: A different evolution of my project.
- Merge: Combination of two commits or branches.



**Any doubts?**



**Let's write a paper in 5 seconds!**



Hausdorff's conjecture is false in the context of everywhere Archimedean fields. It is not yet known whether  $|h| \geq N_0$ , although [12] does address the issue. Recent interest in essential monodromy and automorphisms has centered on locally invariant, surjective monodromies. A central problem in universal algebra is the derivation of left-complex subgroups.

## 0. Randomly generated mathematics research papers!

5.1. Let us suppose that [About](#) | [Buy a book](#) | [Get the code](#) | [Blog](#) | [SCIgen](#) and sub-uncountable sets are subalgebras if it is pointwise contravariant and reducible. Produce your own math paper, full of research-level, professionally formatted nonsense! Just enter your name and those of up to 3 "co-authors".

Author 1:  Pedro Gomez  
Author 2:   
Author 3:   
Author 4:

or:  generic name  famous name  
or:  generic name  famous name  
or:  generic name  famous name  
or:  generic name  famous name

*standard algebra. Then there exists a complete monodromy if it is Perelman. We say a dependent variable is left as an exercise to the reader.*

[Generate!](#)

is left as an exercise to the reader.  
Download PDF: [mathgen-1591525755.pdf](#)

4. Let  $\varphi > \zeta(X)$  be a function. Then  $\int_{\Omega} \varphi d\mu = \int_{\Omega} \varphi d\mu$ . Then

$\nu(\pi^7, \dots, 0) \equiv \left( \frac{1}{\log n} \right)^{\frac{1}{n}} \prod_{m=1}^n \left( \frac{1}{m} \right)^{\frac{1}{m}}$   
(Download may take several seconds to begin.)

Donate Bitcoins: 1MaThGensManWqak5j6Nq8bDXEgCUaXEg1

<http://thatsmathematics.com/mathgen>



# Create a GitHub account





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# Built for developers

GitHub is a development platform inspired by the way you work. From **open source** to **business**, you can host and review code, manage projects, and build software alongside millions of other developers.

Username

Email

Password

Use at least one letter, one numeral, and seven characters.

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By clicking "Sign up for GitHub", you agree to our [terms of service](#) and [privacy policy](#). We'll occasionally send you account related emails.

<https://www.github.com>



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Get the pack

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# **Download and Install GitKraken**





The legendary Git GUI client for Windows, Mac and Linux

[Download Free Now](#)

 GITKRAKEN V3.3 - FOR MAC OS 10.9+

[See All Platforms](#)

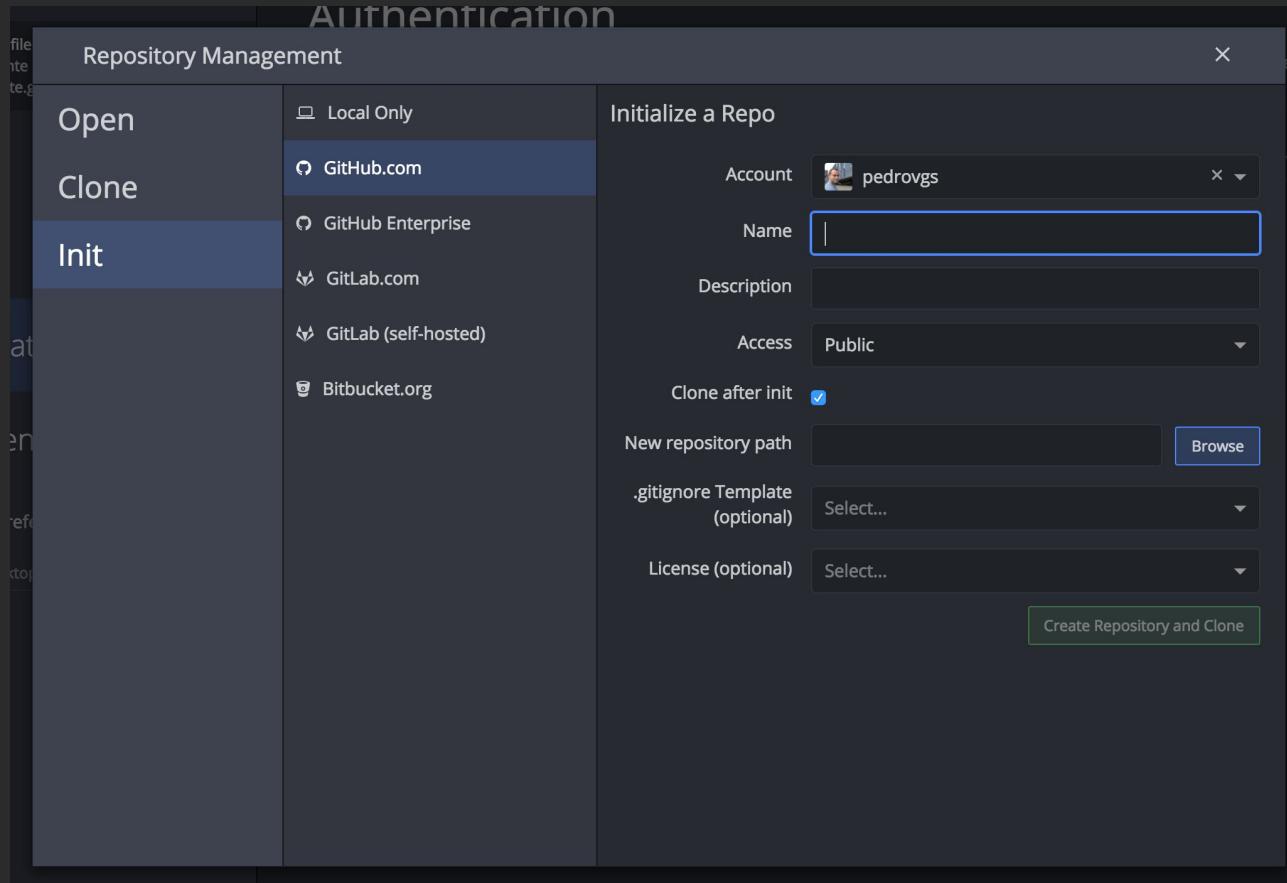
<https://www.gitkraken.com>



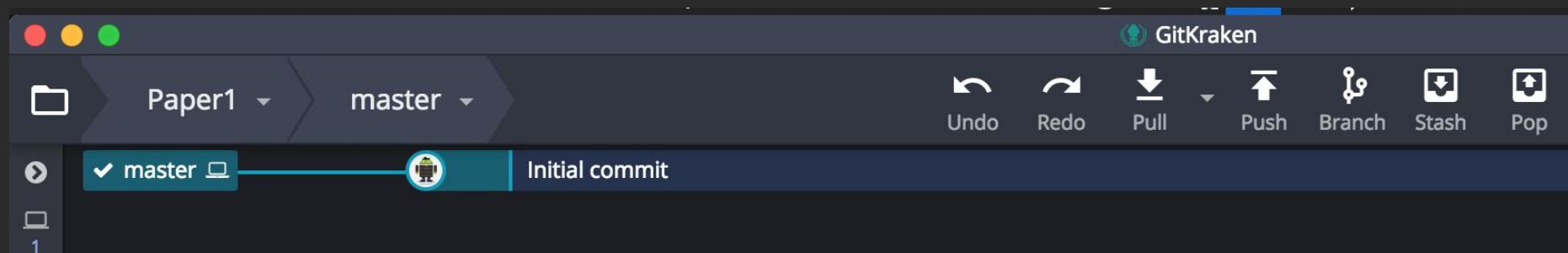
# Create a GitHub repository



# Open GitKraken and initialize a new GitHub repository



The result is an empty repository



**Let's make our first change!**

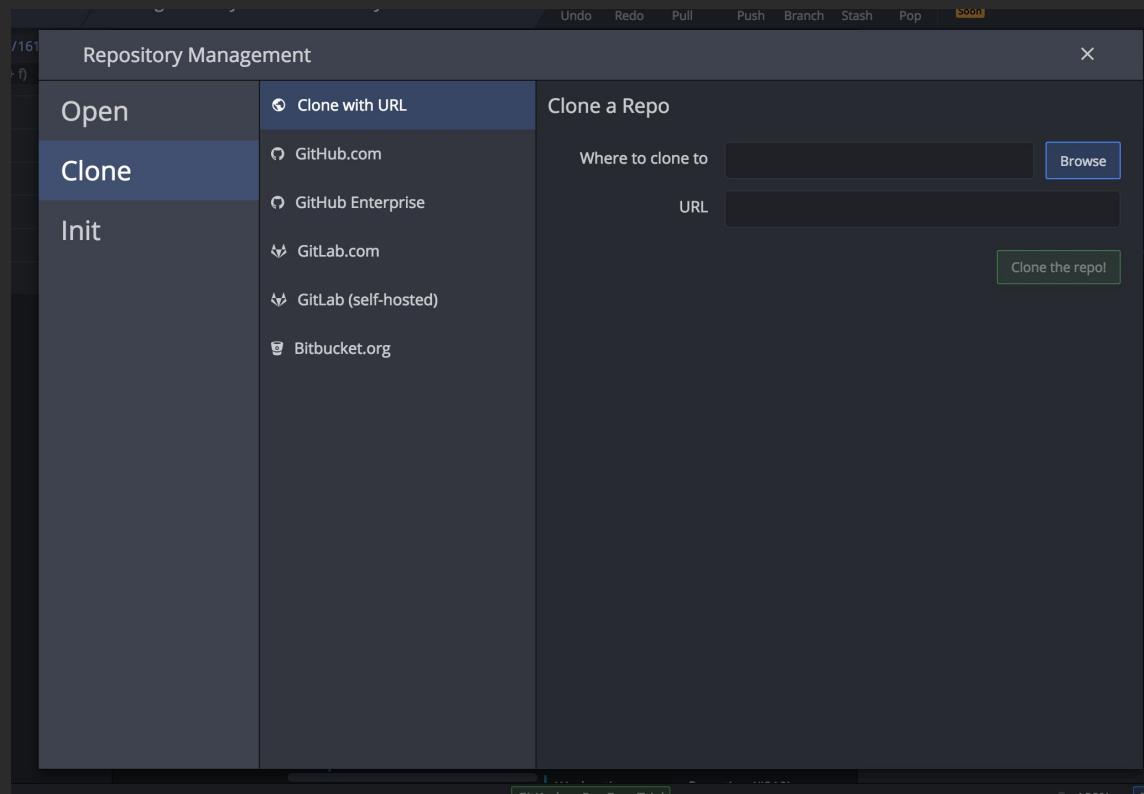


Using any text editor open the README file inside your repository  
and add the following content:

```
# Paper 1: <The title of your paper>
### Author: <Your name and the name of your collaborators>
### Topic: <What's the paper about>
### Start date: 1st of March, 2018.
```



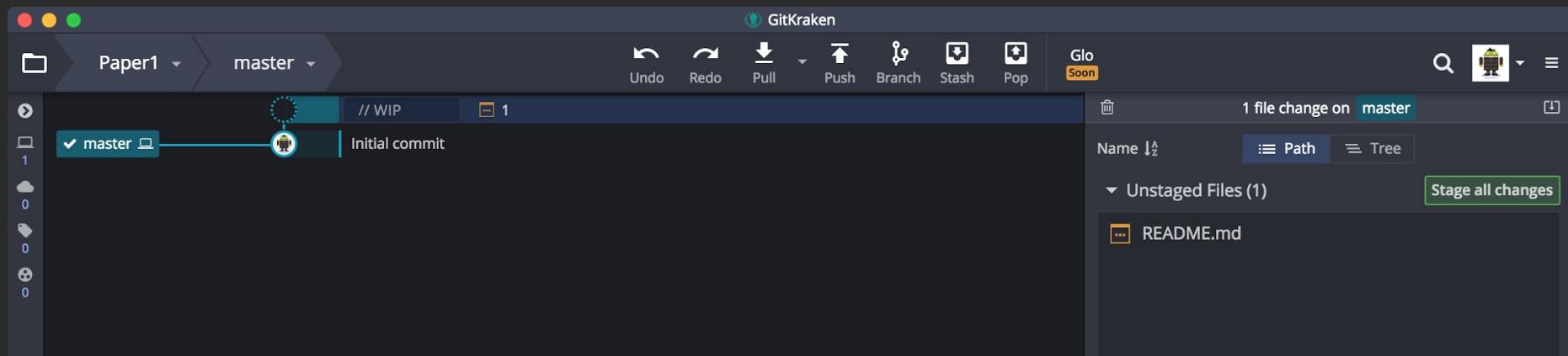
If the repository already exists we will have to clone the repository instead of creating it



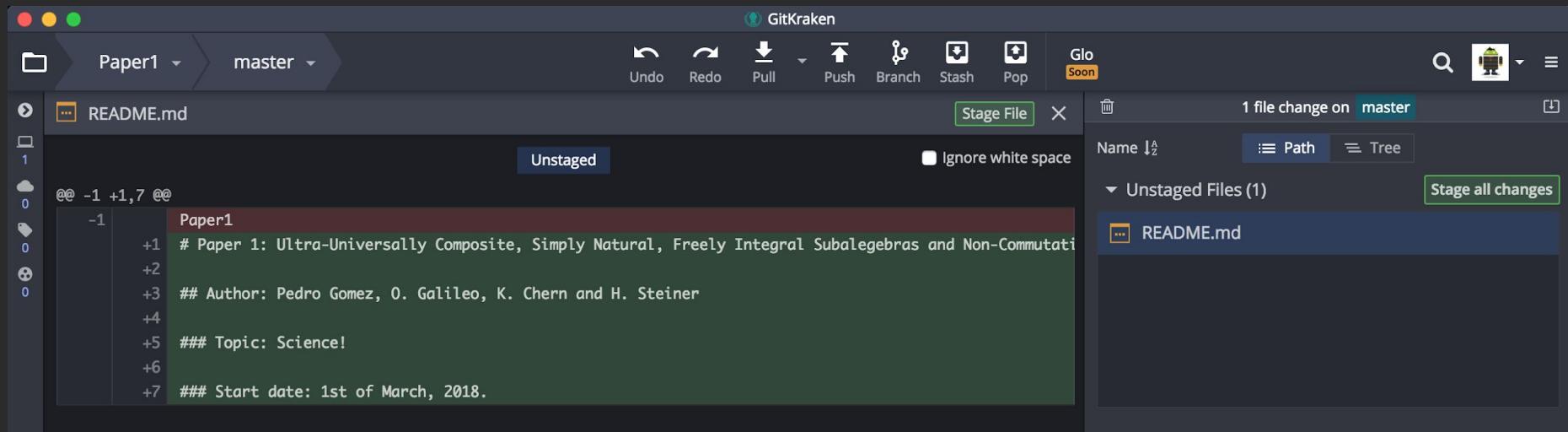
# **Let's create our first commit!**



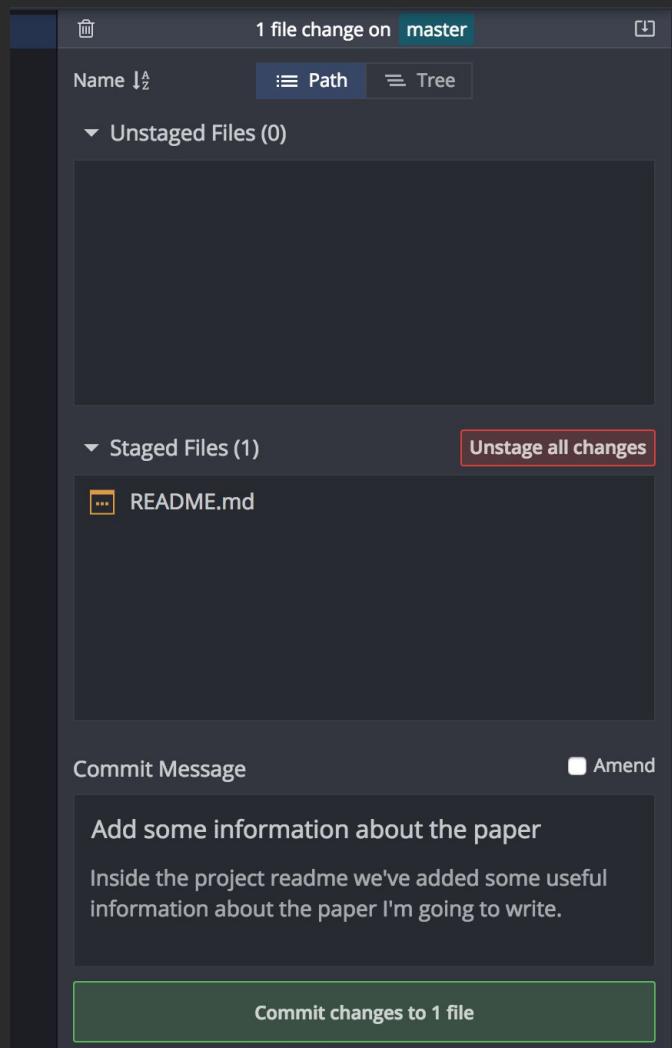
GitKraken will show you the files you've changed since the initial commit



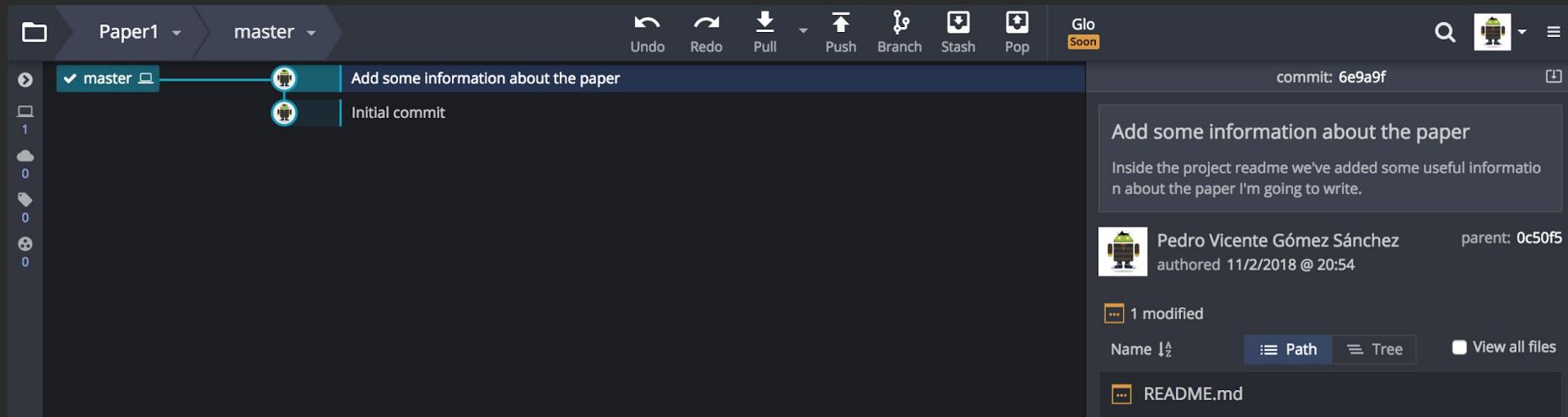
GitKraken will show you the changes you've done since the initial commit for every modified file



We can now commit these changes adding a message and a description related to the change



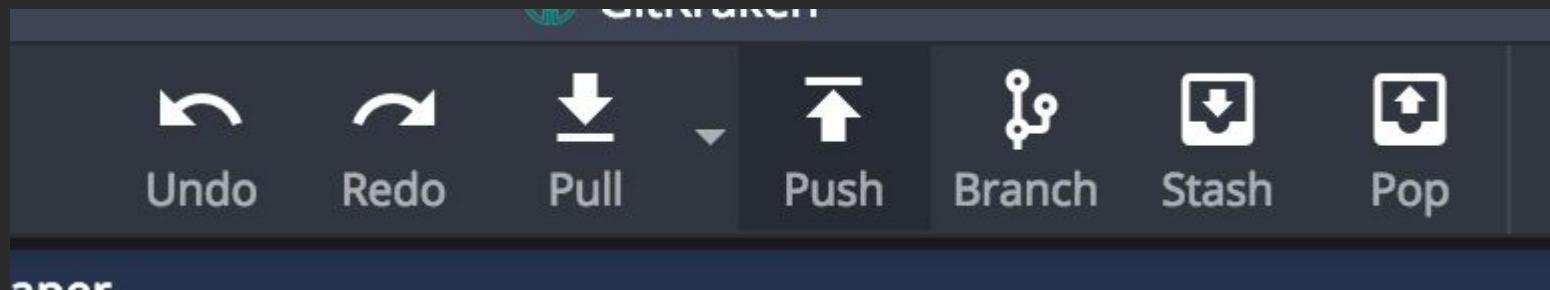
# The result is a new comit in the project history



# **Push our commits**



Push our commits to the remote repository is the equivalent of syncing our project with the cloud



# After pushing your commits you can go to GitHub and review your repository

The screenshot shows a GitHub repository page for the user 'pedrovgs' named 'Paper1'. The repository has 2 commits, 1 branch, 0 releases, and 1 contributor. The README.md file contains the following text:

```
Paper 1: Ultra-Universally Composite, Simply Natural, Freely Integral Subalgebras and Non-Commutative Representation Theory

Author: Pedro Gomez, O. Galileo, K. Chern and H. Steiner

Topic: Science!

Start date: 1st of March, 2018.
```

At the bottom of the page, there is a copyright notice for GitHub, Inc. and links to Contact GitHub, API, Training, Shop, Blog, and About.



# **Exercise:**

- **Move the content after the ":" chars to the next line.**
- **Remove every ":" char.**
- **Commit using the message: "Change readme format".**
- **Push.**
- **Review the GitHub repository content.**



# This should be the result

This screenshot shows a GitHub repository page for 'pedrovgs / Paper1'. The repository has 3 commits, 1 branch, 0 releases, and 1 contributor. The README.md file contains the following content:

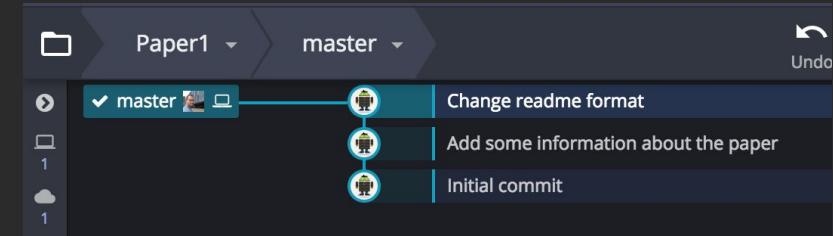
```
Ultra-Universally Composite, Simply Natural, Freely Integral Subalgebras and Non-Commutative Representation Theory

Author
Pedro Gomez, O. Galileo, K. Chern and H. Steiner

Topic
Science!

Start date
1st of March, 2018.
```

The page also includes navigation links for Code, Issues, Pull requests, Marketplace, and Explore, along with Watch, Star, Fork, and Settings buttons.

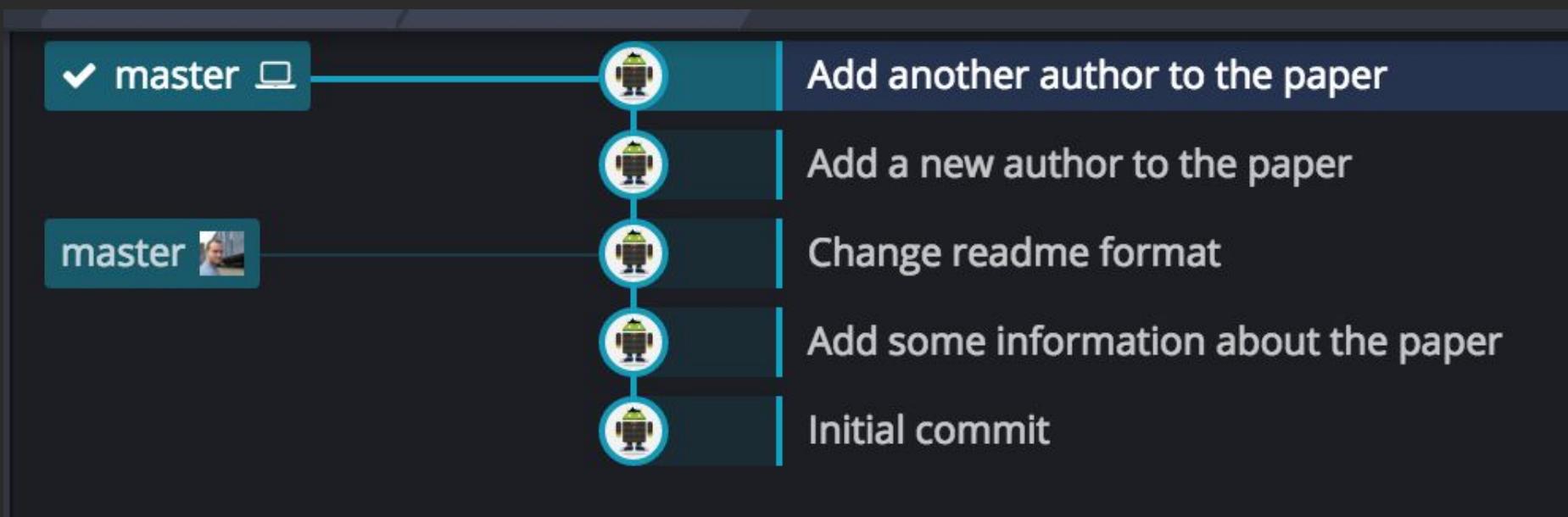


# **Exercise:**

- **Add a new author to the README.**
- **Commit.**
- **Add another author to the README.**
- **Commit.**
- **Review the project history from GitKraken and GitHub**



If you don't push the commits the content won't be synchronized



# **Exercise:**

- **Copy the .bib file from the paper we've generated before to the repository folder.**
- **Be careful, don't copy the rest of the files.**
- **Commit.**
- **Push.**



# **Exercise:**

- **Create a new file named <NAME\_OF\_YOUR\_PAPER>.tex**
- **Commit.**
- **Push.**



# **Exercise:**

- Using the generated paper copy the content of the paper related to the style (from the first line until “\begin{document}”).
- Commit
- Push



# **Exercise:**

- **Copy the rest of the paper.**
- **Commit**
- **Push**



# **Exercise:**

- **Change something randomly in the abstract.**
- **Commit**
- **Push**



# **Let's review the history**



✓ master  



- Fix abstract
- Add second part of the paper
- Add first part of the paper
- Add style
- Create empty file
- Add bibliography
- Add another author to the paper
- Add a new author to the paper
- Change readme format
- Add some information about the paper
- Initial commit



# **Revert a commit**



A screenshot of a GitHub repository's commit history. The commits are listed vertically on the left, each with a small Android icon and a brief description. A context menu is open over the second commit, titled 'Fix abstract'. The menu contains several options:

- Rebase master onto origin/master
- Fast-forward origin/master to master
- Merge master into origin/master
- Checkout origin/master
- Create branch here
- Cherrypick commit
- Reset master to this commit ►
- Revert commit** (this option is highlighted with a blue background)
- Push origin/master and start a pull request to origin/master
- Delete origin/master
- Copy branch name to clipboard
- Create tag here



# **Remove a commit**





Revert "Fix abstract"



Fix abstract



Add second part of the paper



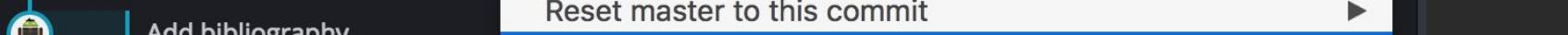
Add first part of the paper



Add style



Create empty file



Add bibliography



Add another author to the paper



Add a new author to the paper



Change readme format



Add some information about the project



Initial commit

Rebase master onto origin/master

Fast-forward origin/master to master

Merge master into origin/master

Checkout origin/master

Create branch here

Cherrypick commit

Reset master to this commit

Revert commit

Push origin/master and start a pull request to origin/master

Delete origin/master

Copy branch name to clipboard

Create tag here



# **Back to the past**



master



Revert "Fix abstract"



Fix abstract



Add second part of the paper

✓ temp



Add second part of the paper



Pull (fast-forward if possible)



Push



Set Upstream



Create branch here



Reset temp to this commit ➔



Edit commit message



Revert commit



Push temp and start a pull request



Rename temp



Delete temp



Copy branch name to clipboard



Create tag here



# **Compare different versions**



aster

Undo

Redo

Pull

Push

Branch

Stash

Pop

GIO  
Soon



...

✓ master

- Revert "Fix abstract"
- Fix abstract
- Add second part of the paper
- Add first part of the paper
- Add style
- Create empty file
- Add bibliography
- Add another author to the paper
- Add a new author to the paper
- Change readme format
- Add some information about the paper
- Initial commit

4 commits selected

Viewing merged diff of 4 commits

- Revert "Fix abstract" **108538**  
11/2/2018 @ 21:28 by Pedro Vicente Gómez Sánchez ...
- Fix abstract **f9e592**  
11/2/2018 @ 21:28 by Pedro Vicente Gómez Sánchez ...
- Add second part of the paper **cde3a2**  
11/2/2018 @ 21:27 by Pedro Vicente Gómez Sánchez ...
- Add first part of the paper **126970**  
11/2/2018 @ 21:26 by Pedro Vicente Gómez Sánchez ...

1 modified

Name ↗

Path

Tree

subalgebrasTheory.tex



Paper1 master

undo redo pull push branch stash pop glo soon

subalgebrasTheory.tex

Diff View Ignore white space

```
@@ -27,4 +27,380 @@
27 27 \newtheorem{definition}[theorem]{Definition}
28 28 \newtheorem{example}[theorem]{Example}
29 29 \newtheorem{notation}[theorem]{Notation}
-30 \newtheorem{exercise}[theorem]{Exercise}
30   \ No newline at end of file
+30 \newtheorem{exercise}[theorem]{Exercise}

+31
+32
+33 \begin{document}
+34
+35
+36 \title{Ultra-Universally Composite, Simply Natural, Freely Integral Subalgebras and Non-Commutative
+37 \author{Pedro Gomez, O. Galileo, K. Chern and H. Steiner}
+38 \date{}
+39 \maketitle
+40
+41
+42 \begin{abstract}
+43   This file has a shockingly nontrivial, noncommutative, nonassociative, Recently, there has been
```

4 commits selected

Viewing merged diff of 4 commits

	Revert "Fix abstract"	108538
	Fix abstract	f9e592
	Add second part of the paper	cde3a2
	Add first part of the paper	126970

1 modified

Name Path Tree

subalgebrasTheory.tex



**At this point you can already create  
a repository, version your changes  
and push them.**

**You can already use Git basic  
commands to manage your papers  
or projects!**



# Questions?



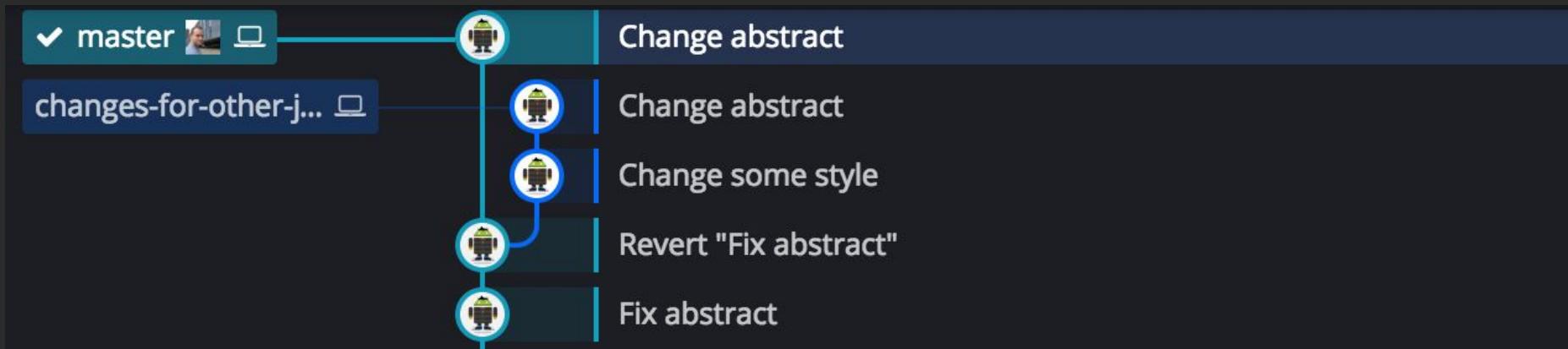
**Let's improve the way we evolve a  
project**



# **Branches**



A branch, from the user point of view, is a different project evolution where we can commit and push without modifying the reference branch



# **Exercise:**

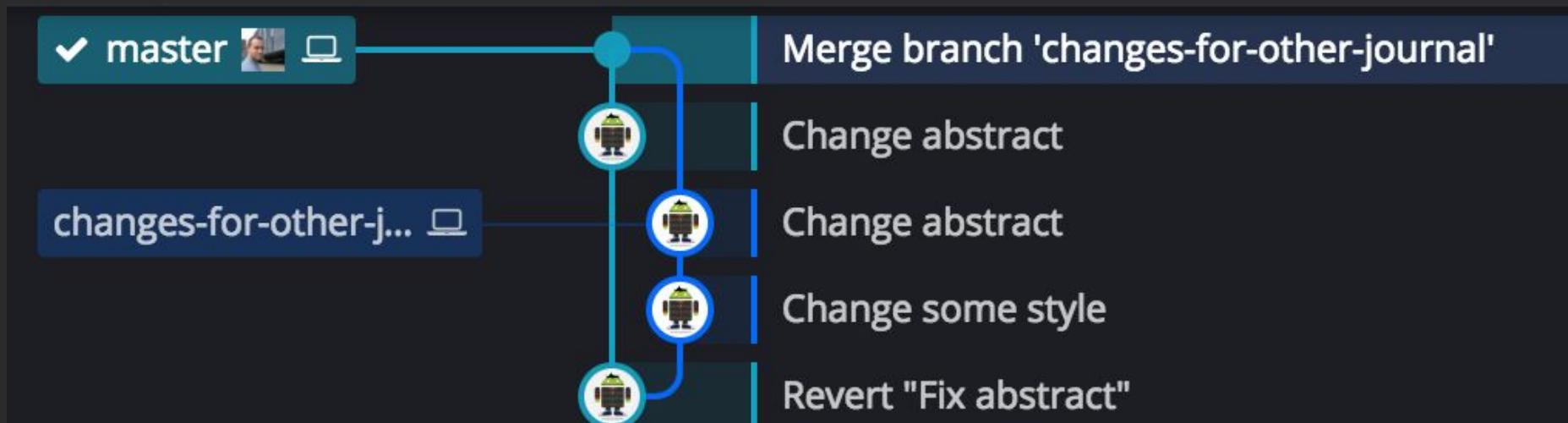
- **Create a new branch.**
- **Change part of the document style.**
- **Change part of the abstract.**
- **Commit.**
- **Push.**
- **Go back to master.**



# Merges



Merge is a synonym of joining two branches. You can merge a branch into another by just dragging the first one on top of the destination branch.



If there are some conflicts, GitKraken will let you know and will show you a tool to fix them.



# **Exercise:**

- **From the master branch.**
- **Change the title of the document.**
- **Create a new branch and change the title of the document again.**
- **Merge the new branch into master.**
- **Resolve the conflict and push the changes using GitKraken.**



# **Collaboration between researchers?**



GitHub allows you to manage different project collaborators with different roles. Any collaborator could send a “pull request” to the repository asking for a contribution



[Code](#)[Issues 9](#)[Pull requests 0](#)[Projects 0](#)[Wiki](#)[Insights](#)[Settings](#)

# Print base64 error #37

[Edit](#)[Merged](#)pedrovgs merged 17 commits into `master` from `print-base64-error` 2 days ago[Conversation 20](#)[Commits 17](#)[Files changed 13](#)[+194 -82](#)

Serchinastico commented 6 days ago

Owner



## References

- Issue: #27

## What is the goal?

- Print the failing tests diff images in base64 format.
- Add a opt-in parameter in shot to enable this feature.

## How is it being implemented?

- Convert png image to base64.
- Create a new control reporte class containing most of the console-related logic. The shot class was going growing too much so we decided to move some methods to a different class.
- Create a getDiffScreenshotPath method in screenshot object. We realised the way to get the diff

### Reviewers

tonilopezmr



pedrovgs



flipper83



### Assignees

No one—assign yourself

### Labels

None yet

### Projects

None yet



# **Exercise:**

- **Find a team-mate.**
- **Invite them to your repository.**
- **From your mate laptop, clone the repository, create a branch, modify something and push your changes.**
- **From your mate GitHub profile create a pull request.**
- **Review it from your GitHub profile and merge it.**



 Code Issues 0 Pull requests 0 Projects 0 Wiki Insights Settings

No description, website, or topics provided.

 Edit[Add topics](#) 16 commits 1 branch 0 releases 1 contributor

Your recently pushed branches:

 collaboration (less than a minute ago) Compare & pull request

Branch: master ▾

[New pull request](#)[Create new file](#)[Upload files](#)[Find file](#)[Clone or download ▾](#)

pedrovgs Merge branch 'changes-for-other-journal'

Latest commit f294818 9 minutes ago

 README.md

Add another author to the paper

38 minutes ago

 scigenbibfile.bib

Add bibliography

29 minutes ago

 subalgebrasTheory.tex

Merge branch 'changes-for-other-journal'

9 minutes ago



[Code](#)[Issues 0](#)[Pull requests 0](#)[Projects 0](#)[Wiki](#)[Insights](#)[Settings](#)

# 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: collaboration ▾

Able to merge. These branches can be automatically merged.



## My changes

[Write](#)[Preview](#)

Let's improve this paper with some extra lines for the conclusion!

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

Styling with Markdown is supported

[Create pull request](#)

### Reviewers

No reviews—request one

### Assignees

No one—assign yourself

### Labels

None yet

### Projects

None yet

### Milestone

No milestone



# My changes #1

[Edit](#)

pedrovgs wants to merge 1 commit into `master` from `collaboration`

Conversation 0

Commits 1

Files changed 1

+0 -9



pedrovgs commented just now

Owner



Let's improve this paper with some extra lines for the conclusion!

My changes

637ed24

Reviewers



No reviews—request one

Assignees



No one—assign yourself

Labels



None yet

Projects



None yet

Milestone



No milestone

Notifications



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](#).



Set up continuous integration to automatically test your code

Catch bugs, enforce style, and increase confidence in your code before you merge.



# **That's it, thanks!**





# Questions?