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# COLLABORATING LIKE PROFESSIONALS: INTEGRATING NETLOGO AND GITHUB

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# WHY VERSION CONTROL?

myModel.nlogo

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myModel-v2.nlogo

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myModel.nlogo

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myModel-v2.1.nlogo

myModel-v2.2.nlogo

myModel-v2.3.nlogo

myModel-v2.3\_temp.nlogo

myModel-v2.3\_temp\_Aug2018.nlogo

myModel-v2.3\_temp\_Aug2018\_(edits).nlogo

# WHY VERSION CONTROL?

myModel.nlogo

myModel-v2.nlogo

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myModel-v2.3\_temp.nlogo

myModel-v2.3\_temp\_Aug2018.nlogo

myModel-v2.3\_temp\_Aug2018\_(edits).nlogo

**There is no excuse for this.**

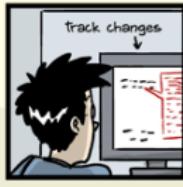
# "FINAL".doc



FINAL\_rev.6.COMMENTS.doc



FINAL\_rev.8.comments5.  
CORRECTIONS.doc



FINAL\_rev.18.comments7.  
corrections9.MORE.30.doc



FINAL\_rev.22.comments49.  
corrections.10.#@\$%WHYDID  
ICOMETOGRAD SCHOOL????.doc

# WHAT IS VERSION CONTROL?

“Version control is a system that records changes to a file or set of files over time so that you can recall specific versions later.”<sup>1</sup>

It tracks **who** changed **what, when**.

The most used version control system is **git**.

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<sup>1</sup><https://git-scm.com/book/en/v2/Getting-Started-About-Version-Control>

# How git WORKS: AN OVERLY SIMPLISTIC ILLUSTRATION

**Repository:** A bunch of files and folders tracked by `git`.

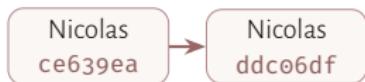
**Commit:** A snapshot of a repo with an author, a timestamp and a commit message.

Nicolas  
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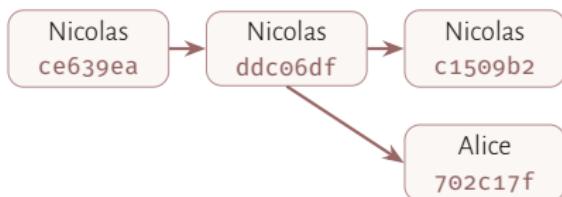
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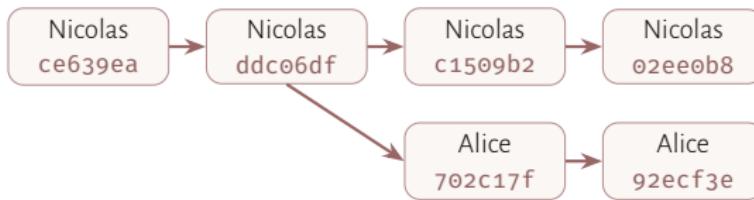
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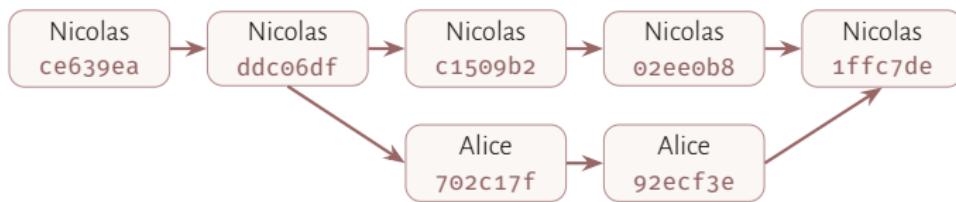
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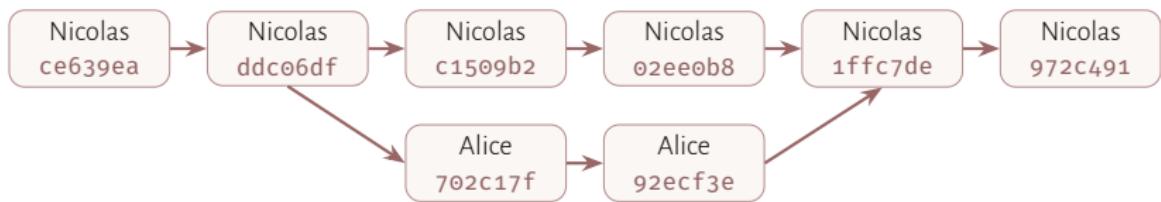
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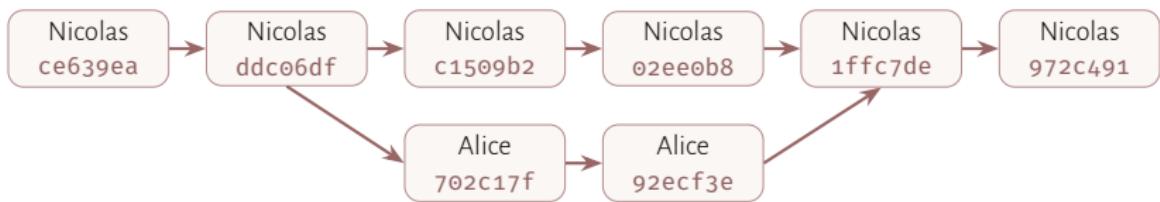
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# How git WORKS: AN OVERLY SIMPLISTIC ILLUSTRATION

**Repository:** A bunch of files and folders tracked by `git`.

**Commit:** A snapshot of a repo with an author, a timestamp and a commit message.



**git:** A version control system.

**GitHub:** A website that hosts `git` repositories.

# WHY GITHUB?

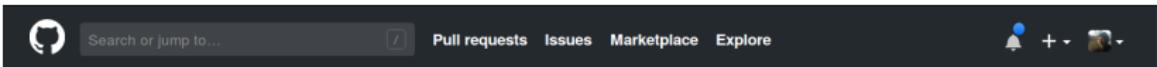
## It's big:

- ▶ 29,904,101 users\*
- ▶ 21,490,796 public repositories\*

\* as of August 15<sup>th</sup> 2018

## It's where the stuff we care about is being developed:

- ▶ <https://github.com/NetLogo>
- ▶ <https://github.com/eclab/mason>
- ▶ <https://github.com/Repast>
- ▶ <https://github.com/JuliaLang>
- ▶ <https://github.com/python>
- ▶ Etc.



NetLogo / models

Code Issues 3 Pull requests 0 Projects 0 Wiki Insights Settings

Branch: master

- Commits on Jul 23, 2018
  - Move RPS to Sample Models/Biology**  
bainco committed 23 days ago ✓
- Commits on Jul 5, 2018
  - LS Parent Example: Change `setup-models` button** ...  
bainco committed on Jul 5 ✓
- Commits on Jun 19, 2018
  - Resave all models in 6.0.4** ...  
bainco committed on Jun 19 ✓
- Commits on Jun 9, 2018
  - Blood Sugar Regulation: Info tab update**  
bainco committed on Jun 9 ✓
- Commits on Jun 3, 2018
  - MTG: Remove HTML tags**  
bainco committed on Jun 3 ✓
  - MTG: Updates from Final Review** ...  
bainco committed on Jun 3 ✘

## PD Two Person Iterated: simplify `act-randomly` procedure

[Browse files](#)

master (#336) 6.0.3-M2

 **nicolaspayette** committed on Jan 18, 2017

1 parent 5cb5d8d commit b3dba953fdd71775ae4f828eb884a0aac8384fa8

 Showing 1 changed file with 2 additions and 4 deletions.

Unified Split

6  Sample Models/Social Science/Unverified/Prisoner's Dilemma/PD Two Person Iterated.nlogo

[View](#) ▾

```
*** @@ -94,12 +94,10 @@ end
94   94      ;;;;;;;;;;;;;;;
95   95
96   96      to act-randomly ; Turtle Procedure
97 -  ifelse random 2 = 0
98 -    [ set defect-now? false ]
99 -    [ set defect-now? true ]
100 +  + set defect-now? one-of [ true false ]
101   98      end
102   99
103 -  - to cooperate ; Turtle Procedure
104 +  + to cooperate ; Turtle Procedure
105   101      set defect-now? false
106   102      end
107   103
***
```

0 comments on commit [b3dba95](#)

# WHY NOT VERSION CONTROL?



Kebnekaise, the highest peak in Sweden (2,106 m).

(Photo by Alexandar Vujadinovic)

```
Terminal File Edit View Search Terminal Help  
16:05:02 ~$ git --help  
usage: git [--version] [--help] [-C <path>] [-c name=value]  
          [--exec-path[=<path>]] [--html-path] [--man-path] [--info-path]  
          [-p | --paginate | --no-pager] [--no-replace-objects] [--bare]  
          [--git-dir=<path>] [--work-tree=<path>] [--namespace=<name>]  
          <command> [<args>]
```

These are common Git commands used in various situations:

start a working area (see also: git help tutorial)

```
clone      Clone a repository into a new directory  
init       Create an empty Git repository or reinitialize an existing one
```

work on the current change (see also: git help everyday)

```
add        Add file contents to the index  
mv         Move or rename a file, a directory, or a symlink  
reset     Reset current HEAD to the specified state  
rm         Remove files from the working tree and from the index
```

examine the history and state (see also: git help revisions)

```
bisect    Use binary search to find the commit that introduced a bug  
grep      Print lines matching a pattern  
log       Show commit logs  
show      Show various types of objects  
status    Show the working tree status
```

grow, mark and tweak your common history

```
branch   List, create, or delete branches  
checkout Switch branches or restore working tree files  
commit   Record changes to the repository  
diff     Show changes between commits, commit and working tree, etc  
merge   Join two or more development histories together  
rebase   Forward-port local commits to the updated upstream head
```

# WHY NOT SOMETHING ELSE?

The screenshot shows the homepage of the CoMSES Computational Model Library. At the top, there are logos for CoMSES, OpenABM, and WEST NEST. The main title is "Computational Model Library". Below the title, there are navigation links for "Home", "Computational Library", "Events", "Jobs", "Community", "Resources", "Forums", "About", and a search icon. A banner at the bottom of the page displays the text "displaying 10 of 528 results" and a navigation bar with pages 1 through 53. Below this, there is a search form with fields for "Sort By" (set to "Relevance"), "Sort ascending" (selected), and "Sort descending" (unchecked). A blue "Apply" button is next to the sort options. To the right of the search form is a sidebar with a green header "Archive a model" containing fields for "Search", "Keywords", and "Published After". The main content area features a list of models. One entry is visible: "The impact of potential crowd behaviours on emergency evacuation: an evolutionary game theoretic approach" by Valerio Rossi, published on Jul 20 05:25:41 2010. The entry includes a thumbnail image, the title, author, date, and a brief description: "Crowd dynamics have important applications in evacuation management systems relevant to organizing safer large scale gatherings. For crowd safety, it is very important to study the evolution of potential crowd behaviours by simulating the crowd evacuation process. Planning crowd control tasks by studying the impact of crowd behaviour evolution towards evacuation could mitigate the possibility of crowd disasters. This is a tutorial environment evacuation scenario model where agents".

<https://www.comses.net/>

The screenshot shows the homepage of the NetLogo User Community Models. At the top, there is a banner with the NetLogo logo and a background image of red arrowheads pointing right. Below the banner, the title "NetLogo" is displayed in a large, bold, black font. To the right of the title, there is a sidebar with a green header "NetLogo User Community Models" and a sub-section "How to share your models". The main content area has a green header "The models". Below this, there is a section titled "User Manuals" with a list of items: "Basic", "Private", "Chinese", "Czech", "Japanese", "Spanish", and "Swahili". To the right of this list, there is a sidebar with a green header "WSiMuNET v5.6 basic by Valerio Rossi". The sidebar contains a brief description: "WSiMuNET is a simple and fast way to introduce the main concepts of wireless environments to undergraduate students. The visual features of the model combined to the short learning curve of NetLogo's environment and language make the tool suitable to be used in either introductory or advanced courses. Therefore, for many experiment setups, no prior knowledge about NetLogo's programming".

<http://ccl.northwestern.edu/netlogo/models/community/index.cgi>

# WHY NOT SOMETHING ELSE?

The screenshot shows the homepage of the CoMSES Computational Model Library. At the top, there are logos for CoMSES, OpenABM, and WEST NERSC. The main title is "Computational Model Library". Below the title, there are navigation links for "Home", "Computational Library", "Events", "Jobs", "Community", "Resources", "Forums", and "About". A search bar is also present. The main content area displays a search result for "The impact of potential crowd behaviours on emergency evacuation: an evolutionary game theoretic approach" by Valerio Rossi. The result includes a thumbnail image, the title, author, publication date (Published Mon Jul 02 05:25:41 2018), and a "View details" link. Below this, there is a sidebar with sections for "Archive a model", "Search", "Keywords", and "Published After". A footer at the bottom left says "No submitted images".

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The screenshot shows the homepage of the NetLogo User Community Models. The header features the NetLogo logo and a background image of red arrowheads pointing right. The main title is "NetLogo User Community Models". Below it, a section titled "How to share your models" provides instructions on how to upload models. The "The models" section lists a single model: "WSiMuNET v5.6 basic by Valerio Rossi". This model is described as a simple and fast way to introduce the main concepts of wireless environments to undergraduate students. It is noted that the visual features of the model combined to the short learning curve of NetLogo's environment and language make the tool suitable to be used in either introductory or advanced courses. A note at the bottom states that the model is provided to users free of charge under the Creative Commons Attribution Non-Commercial license.

<http://ccl.northwestern.edu/netlogo/models/community/index.cgi>

# Sharing, but no VC/collaboration.

# WHY NOT THE MODELING COMMONS?

The screenshot shows the homepage of the Modeling Commons website. At the top, there's a banner featuring a collage of various agent-based models. To the right of the banner is a login form with fields for Email Address, Password, and a Login button, along with a "Start TogetherJS" link. Below the banner is a navigation bar with links for Home, List models, Help, and Blog, and a search bar labeled "Search Models".

**Welcome to the Modeling Commons!**

The Modeling Commons is for sharing and discussing agent-based models written in [NetLogo](#). With more than 1,000 models, contributed by modelers from around the world, you're bound to learn something new.

Have you created a new NetLogo model? We would love to see it; please [register](#), and share it with us!

**Explore The Modeling Commons**

- 
- Suggestion: Search for lightning'*
- [List all 1,000+ models](#)
- [List recently changed models](#)
- [Jump to a random model](#)
- [View projects \(model collections\)](#)
- [Help!](#)

**Want to share and participate?**

 Fill out our [registration](#) form, and you'll be able to upload, tag, and discuss models.  
Already registered? [Login to the Commons](#).

**Most Viewed Models (in the past 2 weeks)**

	Amel Koudrot <a href="#">Food-web Algerian desert</a> Viewed 174 times in the past 2 weeks
	Amel Koudrot <a href="#">Food-web in Arabic</a> Viewed 74 times in the past 2 weeks
	Alvaro Gómez <a href="#">Supply Chain</a> Viewed 68 times in the past 2 weeks
	Uri Wilensky <a href="#">GIS General Examples</a> Viewed 65 times in the past 2 weeks
	Nicholas Bennett <a href="#">Discrete Event Simulation: Queues and Servers</a> Viewed 62 times in the past 2 weeks
	Joshua Abraham <a href="#">Food Chain with 10% Energy Rule</a> Viewed 51 times in the past 2 weeks

<http://modelingcommons.org>

# WHY NOT THE MODELING COMMONS?

The screenshot shows the homepage of the Modeling Commons website. At the top, there's a banner with the text "NetLogo's Modeling Commons" and a small image of a model. To the right is a login form with fields for Email Address, Password, and a "Login" button. Below the banner is a navigation bar with links for Home, List models, Help, and Blog. A search bar labeled "Search Models" is also present. The main content area starts with a "Welcome to the Modeling Commons!" message. It explains that the site is for sharing and discussing agent-based models written in NetLogo. It highlights that there are over 1,000 models contributed by modelers from around the world. Below this, a message encourages users to register their own models. Two main sections follow: "Explore The Modeling Commons" which lists various ways to interact with the site, and "Most Viewed Models (in the past 2 weeks)" which lists several popular models with their names, authors, and view counts.

Register to share and participate | Forgot Password

Email Address  Password  Login

Start TogetherJS

Home List models Help Blog Search Models

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Most Viewed Models (in the past 2 weeks)

Model Name	Author	View Count
Food-web Algerian desert	Amel Koudrot	174
Food-web in Arabic	Amel Koudrot	74
Supply Chain	Alvaro Gómez	68
GIS General Examples	Uri Wilensky	65
Discrete Event Simulation: Queues and Servers	Nicholas Bennett	62
Food Chain with 10% Energy Rule	Joshua Abraham	51

<http://modelingcommons.org>

NetLogo specific. Acquired skills are not transferable.

# WHAT I WANT TO DO

## Short term:

- ▶ Encourage modellers to upload their models to GitHub by making them easily discoverable from within NetLogo.

## Longer term:

- ▶ Integrate some **git** features inside NetLogo.



By Adam Jones from Kelowna, BC, Canada - Replica of Trojan Horse - Canakkale Waterfront - Dardanelles - Turkey, CC BY-SA 2.0, <https://commons.wikimedia.org/w/index.php?curid=64144380>

# THE “ONLINE MODELS” DIALOG

Online Models from GitHub

- ▶ Konark96/cisc489proj3
- ▶ kurohit/messManagement
- ▶ kurtulussahin/Gsm-Operator-Switching
- ▶ kushah/FIU-MCPHS-SWARMATHON-HS-201
- ▶ kylescotshank/critical-transitions-in-agent-
- ▶ l-hartman/NetLogo-Sorting
- ▶ labondano/Abondano-ABM
- ▶ LABSS/PeerReviewGPS
  - ▶ PeerReviewGPS-v07
- ▶ lackaff/abmturnover
- ▶ LaurentBerder/Agent-Based-Modelling
- ▶ Iclms/MalwareProp
- ▶ LEinfeldt/ModellingProject
- ▶ leojimenezcr/practicas-ai
- ▶ leonpoint/ocprojekt
- ▶ LeosNoob/Algoritmos-git
- ▶ les-vrais-savent/Asterix
- ▶ LESSSE/TrafficGrid
- ▶ lg8897203/netlogo
- ▶ licarth/netlogo-ville
- ▶ lienemjess/lienemjess.github.io
- ▶ linkas/Refugees-Flow-Simulation
- ▶ LittleAri/Iterated\_Prisoner\_Dilemma
- ▶ LIUhuhan123456/Multiagent-Simulation
- ▶ lizzydonkin/NetLogoCode
- ▶ lknoldhera/zombie

**WHAT IS IT?**

This is a model of paper publication and consumption that allows to study the effect of two different evaluation mechanisms, peer review and reputation, on the quality of the manuscripts accessed by a scientific community.

**HOW IT WORKS**

In order to compare the two filters - reputation and peer review - the model includes a common paper production mechanism and then runs two distinct sub-models for accessing papers: one driven by reputation and the other by peer review.

The simulation cycle of the model begins with paper production, generating the papers for the current time step and adding them to the papers pool. Afterwards, it applies either a simulated peer review process or a simulated reputation mechanism, both driving parallel reading processes. In the former case, scientists read papers as prioritized by journal's quality whereas, in the latter case, they read papers as prioritized by their reputation.

The two sub-models share the same ground truth for what regards paper and scientist quality. This guarantees a clean comparison, made with exactly the same papers in the system, at the cost of

OAuth2 token: \*\*\*\*\*(redacted)

(Re)load model list from GitHub

Open Model

Cancel

## Technical stuff

- ▶ Make it a plugin
- ▶ Improve UI, caching, authentification, etc.

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## Possible features

- ▶ Upload current model to a new repo on GitHub;
- ▶ Commit changes and push them to GitHub;
- ▶ “Fork” someone else’s model;
- ▶ Open “pull requests” for someone else’s model;
- ▶ Show diffs between two versions of a model in the code tab.

# HOW TO TRY IT

## From a bash terminal:

```
git clone -b online-models https://github.com/nicolaspayette/NetLogo.git  
cd NetLogo  
git submodule update --init  
.sbt netlogo/run
```

## For issues or suggestions:

- ▶ [nicolaspayette@gmail.com](mailto:nicolaspayette@gmail.com)