

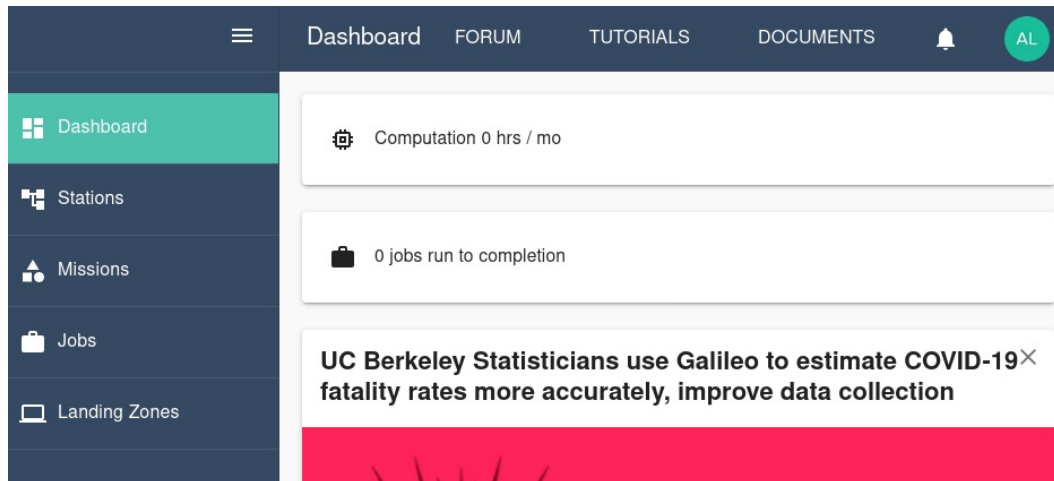
Tutorial: Running R in Galileo

Gettting started with R in Galileo

To get started with Galileo, [log into your account](#) using Firefox or Chrome.

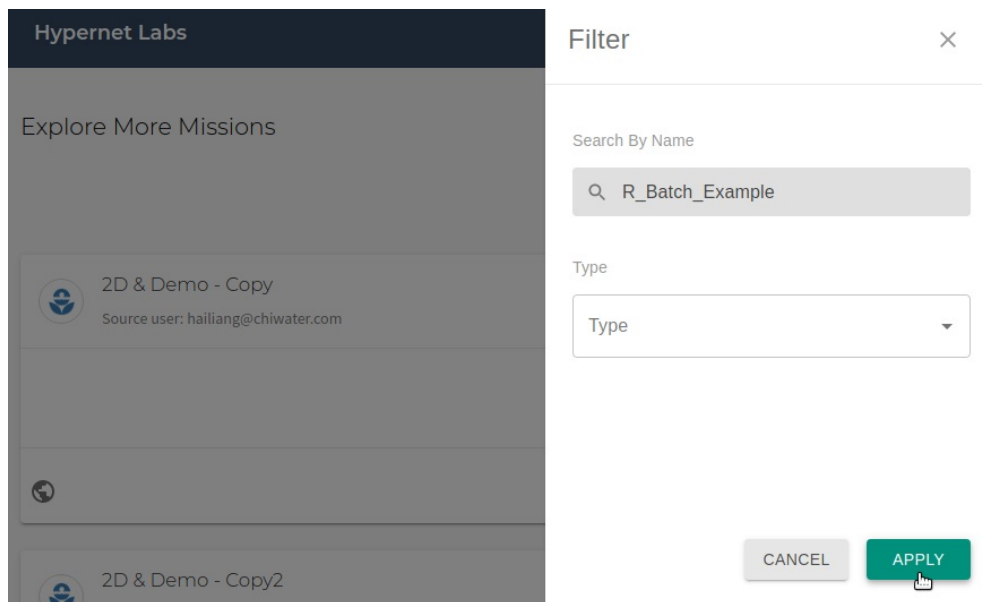
Understanding the user interface and cloning a Mission

When you log into Galileo, the first thing you'll see is your Dashboard:



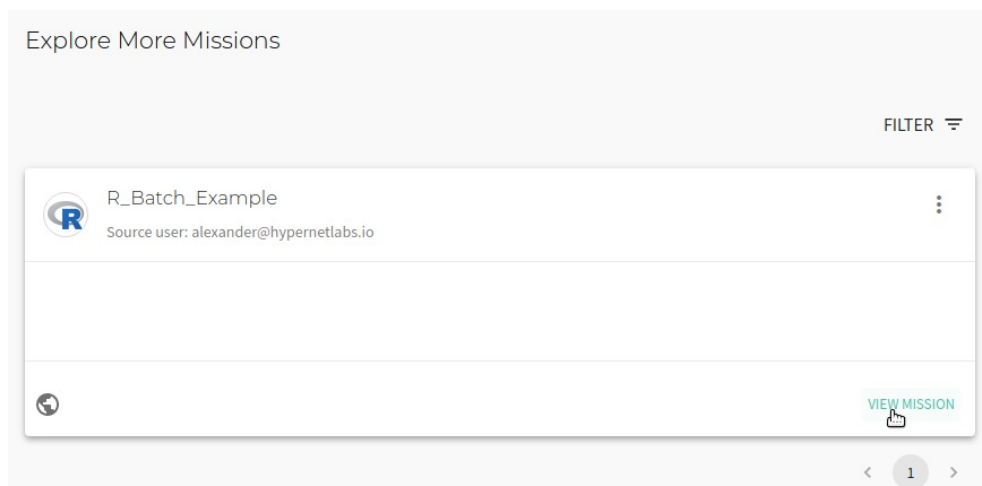
View of the Galileo Dashboard

To run the R example, start by navigating to the Missions tab using the side menu. Clone the R Batch example Mission from the Explore Missions tab. Use the filter to search for the mission by name and click “Apply”.



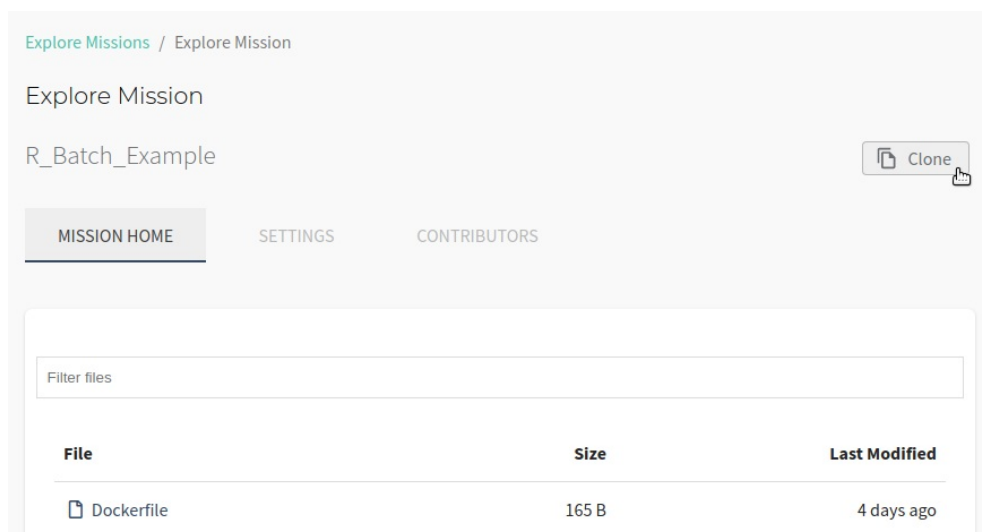
Find the public example mission by name

Once you have found the correct Mission, click “View Mission”.



Click View Mission

To clone the public Mission to your account, click the “Clone” button in the upper right corner of the interface. Choose between creating a public or private clone and also choose which Cargo Bay to use.




Clone the mission

You will now see a cloned copy of the Mission in your Missions.


Missions

Create a custom mission

Add a mission




Drag and drop mission folder or click to upload

FILTER


R_Batch_Example

Cloned from: alexander@hypernetlabs.io

⋮

RUN MISSION
UPDATE MISSION

The cloned copy

Let's take a look at our files

The rMonteCarlo.R script conducts a linear regression, makes a simple plot, and then runs two Monte Carlo simulations.

The first Monte Carlo simulates tossing two dice and calculates the number of rolls that are 7 or less. The second Monte Carlo increases the number of iterations and runs the simulation in parallel.

Running a job and collecting results

Now we are ready to run a job using the Mission. Click the **Run** button in the upper right corner of the Mission tab. You will see a "Mission run successfully!" message. At the bottom of the Mission tab, you can track the progress of the job.

Jobs

↺

R_Batch_Example


Show More

⋮

Completed

UPLOADED: Tue Mar 09 2021 12:58:58
SENT TO: andromeda-21
SENT BY: alexander_berry@brown.edu
TIME TAKEN: 00:00:08

Rows per page: 20
1-1 of 1
|< < > >|



Track job progress

Once the computation is completed, the job will shut down and collect the results. Once the job progress reads “Completed”, you can download the results by opening the three-dot menu and clicking **Download**.

The screenshot shows a job titled "R_Batch_Example" with a status of "Completed". A green button labeled "Completed" is visible. To the right, a three-dot menu is open, showing "Download" and "Archive" options. Below the job title, a table displays metadata:

UPLOADED	: Tue Mar 09 2021 12:58:58	SENT TO	: andromeda-21
SENT BY	: alexander_berry@brown.edu	TIME TAKEN	: 00:00:08

At the bottom, there is a pagination bar showing "Rows per page: 20", "1-1 of 1", and navigation arrows. A search icon is located in the bottom right corner.

Download results

Let's take a look at the the output.log file first, which returns the results of the regression and simulation:

```
[1] REGRESSION EXAMPLE
[1] Let's run a simple regression with the mtcars dataset and make a plot, which will be saved in the filesys folder

Call:
lm(formula = mpg ~ wt, data = mtcars)

Residuals:
    Min       1Q   Median       3Q      Max
-4.5432 -2.3647 -0.1252  1.4096  6.8727

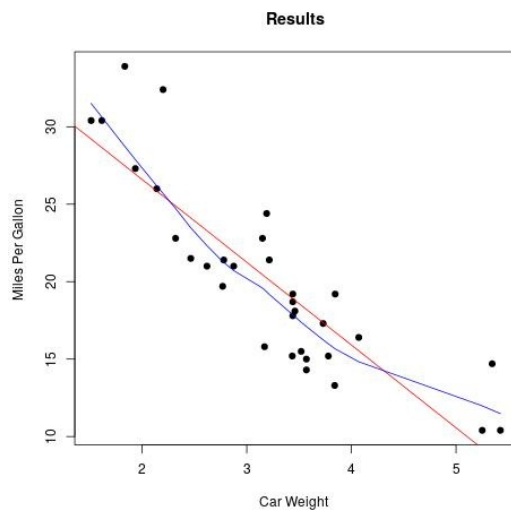
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  37.2851     1.8776   19.858 < 2e-16 ***
wt          -5.3445     0.5591   -9.559 1.29e-10 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.046 on 30 degrees of freedom
Multiple R-squared:  0.7528, Adjusted R-squared:  0.7446
F-statistic: 91.38 on 1 and 30 DF, p-value: 1.294e-10

Warning message:
In grSoftVersion() :
  unable to load shared object '/usr/local/lib/R/modules//R_X11.so':
  libXt.so.6: cannot open shared object file: No such file or directory
null device
1
[1] MONTE CARLO EXAMPLE
[1] Let's load a library
[1] What is the probability that the sum of rolling two fair dice is at least 7?
[1] We can work out the answer (0.583), but let's prove it with simulation
[1] We'll write a function that simulates trials of dice throws and returns TRUE if at least 7
[1] Let's try 50,000 trials, record the system time, & calculate the mean of the outcomes
   user system elapsed
  0.060  0.000  0.058
[1] 0.58544
[1] pretty close but we're still a little off -- let's try running in parallel
[1] Let's try 1 million throws, record the system time, & calculate the mean of the outcomes
   user system elapsed
  5.204  1.600  7.296
[1] 0.583543
[1] As you can see, the result is much more accurate, and the run didn't take very long
```

Output.log results

Next, if we look in the results folder, we can see the plot we created for the regression:



Regression plot

Contact us

We hope this tutorial was helpful. Please let us know if you have any questions or any problems using Galileo. Your feedback is extremely important to us. Contact us anytime at matthew@hypernetlabs.io or alexander@hypernetlabs.io.