# Is my code really doing what I think it is?

A brief introduction to unit testing in R with **testthat**

R User Group Oxford 2019-01-14

Jonathan Harrison

harrison@maths.ox.ac.uk

@jonty3502

MY CODE DOESN'T WORK
I HAVE NO IDEA WHY
MY CODE WORKS
I HAVE NO IDEA WHY
VIA 9GAG.COM

# Does my code do what I think it does?

- We have a duty to ensure that the software we produce performs the task we intend it to **correctly**

# Does it still do what I think it does?

- We have a duty to ensure that the software we produce performs the task we intend it to **correctly**
- If I change some code, (to add functionality) does it still do what I think it does?

* Demo *

# Unit testing: Because your software deserves better than windows 95 …

Testing code can help catch bugs

# What is unit testing?

- A software testing method by which individual units of code are tested to determine whether they are fit for purpose

# R package for unit testing: t**estthat**

*“Testing your code can be painful and tedious, but it greatly increases the quality of your code.* ***testthat*** *tries to make testing as fun as possible, so that you get a visceral satisfaction from writing tests.”*

# What does **testthat** do?

- Provides functions to describe what you **expect** a function to do
- Integrates with existing workflow (informal testing, command line, automated …)
- Progress of tests displayed visually

# Exceeds expectations

Tests are organised hierarchically as follows:

- `context(“some string”)`
  - `test_that()`
    - `expect_*`

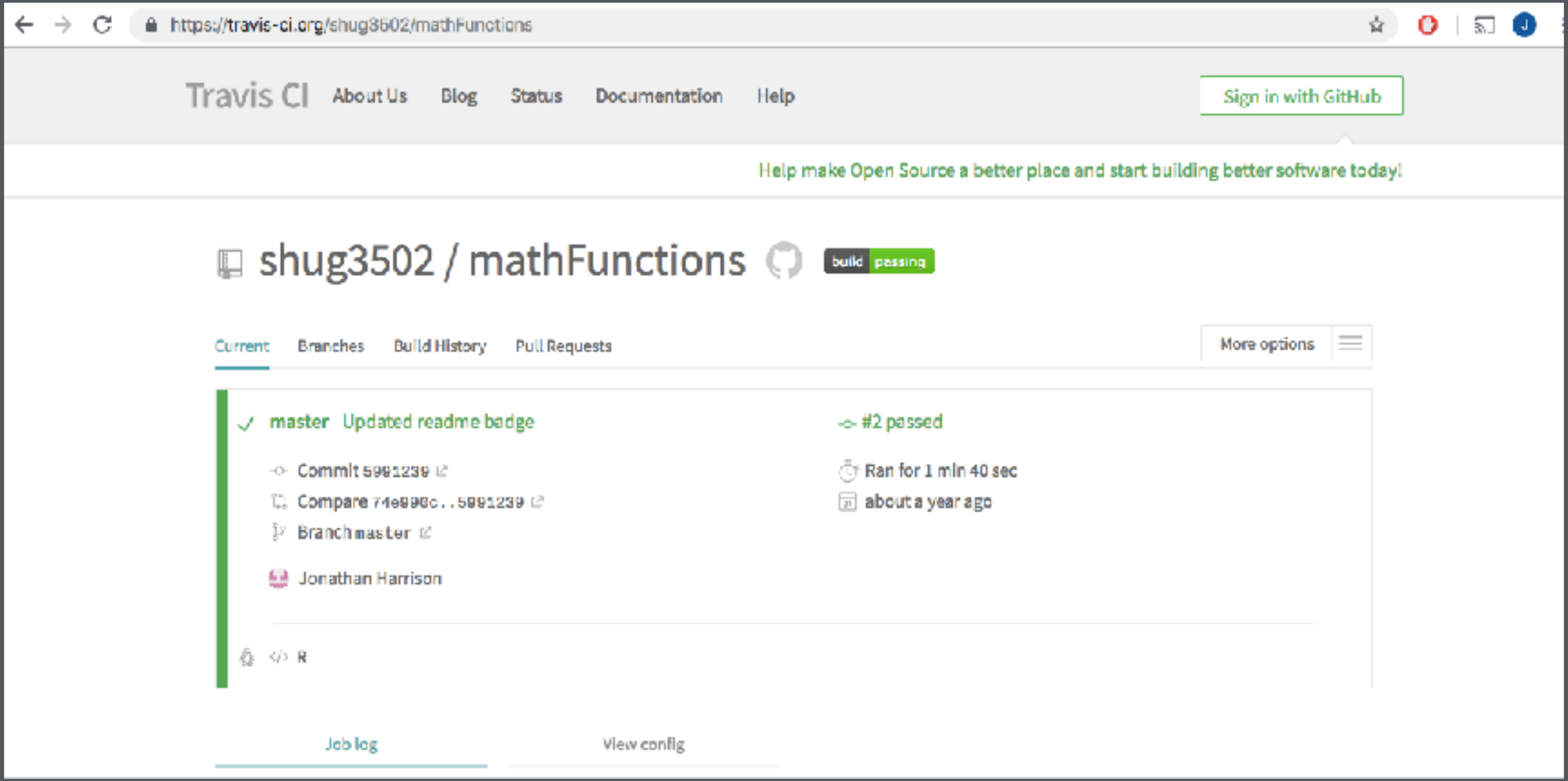
# Informal testing

* Demo *

# Automated testing

* Demo *

# Bonus: Continuous integration with Travis and Github



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Branch master

Jonathan Harrison

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about a year ago

R

Job log · View config

https://travis-ci.com/

https://github.com/

# The ‘right’ way to test code

# The ‘right’ way to test code

- Rule of thumb: write a test for anything you would informally test in the R console

- Beware of spending all your time testing things that aren’t going to break

- Alternatively: Test Driven Development

# So, if its not too late for new years resolutions, consider unit testing your code in 2019

- The following resources may be helpful starting points:
  - https://cran.r-project.org/web/packages/testthat/index.html
  - https://katherinemwood.github.io/post/testthat/
  - https://fcooper8472.github.io/software_best_practices/unit_testing
  - http://stat545.com/packages00_index.html

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