

CODECHECK -- Independent execution of computations underlying research articles

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Slides: <http://bit.ly/eglen-ssi> (CC-BY license)

Acknowledgements

Joint work with Daniel Nüst; Supported by Mozilla foundation and Sustainable Software Institute. Thanks to Bruno Viera (2015?) for introduction to Docker.

<https://codecheck.org.uk>.

Overview

1. Author sends codechecker a link to their (open access) paper, data and code, along with instructions on how to run code.
2. Codechecker runs code independently, and checks if key results (figures, tables) can be reproduced in own environment. If no, go to step 3, else (yes) go to step 4.
3. Codechecker communicates problems to author directly (not anonymously). If author can fix problem, return to step 1.
4. Codechecker writes a certificate showing what could be reproduced.

Comparison with Code Ocean

1. Some journals are testing out the Code Ocean notion: capsules that can run on the web. "Runnable *forever* by *everyone*".
2. CODECHECK sets a much lower bar: "Runnable *once* by *someone*".

Advantages of a CODECHECK certificate

1. Authors can verify their code works for someone else. (Not everyone writes Dockerfiles [yet](#).)
2. Codecheckers (ECRs?) gain experience of peer review, in an open and constructive manner.
3. If used during peer review, editors and reviewers can see that "code works". Not often checked.
4. Readers, upon seeing certificate, have confidence that code and data are available. (*cf.* "Materials available upon reasonable request".)

Progress to date

1. Summer 2019: two students helped curate some "historical" papers of interest in my field (computational neuroscience).
2. April 2020: publication of first real certificate, in Gigascience for a machine learning paper [blog](#).
3. COVID-19: started working on reproducing key papers, firstly from LSHTM and then Imperial College.

"Report 9" findings from Imperial College



Sabine L. van Elsland

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Independent review @StephenEglen confirmed that @MRC_Outbreak team's #COVID19 simulation is reproducible: thumbs up from code-checking efforts @nature #COVID19
[#covid19sciencenature.com/articles/d4158...](https://www.nature.com/articles/d4158...)



Thomas Angus/Imperial College London

Critiqued coronavirus simulation gets thumbs up from code-checkin...

Influential model judged reproducible — although software engineers called its code 'horrible' and 'a buggy mess'.

[nature.com](https://www.nature.com)

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See Sabine L. van Elsland's other Tweets



Next steps

1. Writing a paper.
2. Discuss with journals about embedding this practice into publication workflow.
3. Discuss with funders about extending project.
4. Building community of codecheckers.