

Munich Internet Research Retreat Raitenhaslach (MIR<sup>3</sup>), 2022

# REPRODUCIBILITY

# The Initial Reproducibility Discussions

The process of reproducing

What we like/dislike about ACM reproducibility?

How could we make it better? → reproducibility system design!

How to reproduce systems?

Reproducibility index? Gain “credit” for creating reproducible research (like h-index)

## Thoughts on ACM-like Reproducibility

No incentive to keep the results available a few months in the future

At the time of review the code is currently not expected for reproducibility

- There are incentives – provide your code, increase your chances for publication
- What about the malicious behavior of reviewers?

Could conferences provide a space supporting reproducibility?

- Support for artefacts that are actively maintained
- The artefacts/supplementary material should be included in the publication!
- A peer-to-peer solution?

There are solutions already, but they are not intuitive

What happens when affiliations change?

# Continuous Sharing of Data – Reproducibility System Design!

A persistent place where everyone can share their research

→ Solutions like mediaTUM support of sharing data – not available to everyone

Publicly available solutions are missing

- Small contributions to a system from multiple entities?
  - Everyone can add, small incentives?
  - Support for large datasets?
- Find solution that gives a DOI for your data to keep it persistent – arxiv style?
- Updates to code should be associated with the same DOI
- If you want to share something, you need to contribute, e.g., storage
- How to prevent, e.g., DoS attacks?
- Work as a git-based system – a perfect master thesis!

## System Reproducibility

Slight changes in the system might result in vastly different results

Simulation can support reproducibility even if the system is different

How correct is the reproduction?

- The world also moves forward – e.g., new kernel versions – requires effort!
- Proprietary hardware – making sure third-party solutions don't affect the results
- Scalability of reproduction – validate a similar system?

Sharing source code of the data a key for reproducibility

Incentivize upgrading – someone updates the code, associate it with the original

How to share the experimental system?

What could conferences do?

What if the conference enforces reproducibility?

When would we need the data enabling reproducibility?

- Non-anonymous reviewers?
- Split the review between the publication and artefacts?
- Require the artefacts on submission?

Does every publication need to be reproducible?

- Certain number of publications within a conference should be reproducible
- Use as an incentive – might increase your acceptance chances