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SoundSoftware.ac.uk Prizes for Reproducibility in Audio & Music Research

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Queen Mary, University of London

EPSRC
Engineering and Physical Sciences
Research Council

About us

The SoundSoftware project (soundsoftware.ac.uk)

- EPSRC-funded
- Smaller sibling to the Software Sustainability Institute
- "Embedded" in the audio & music research field
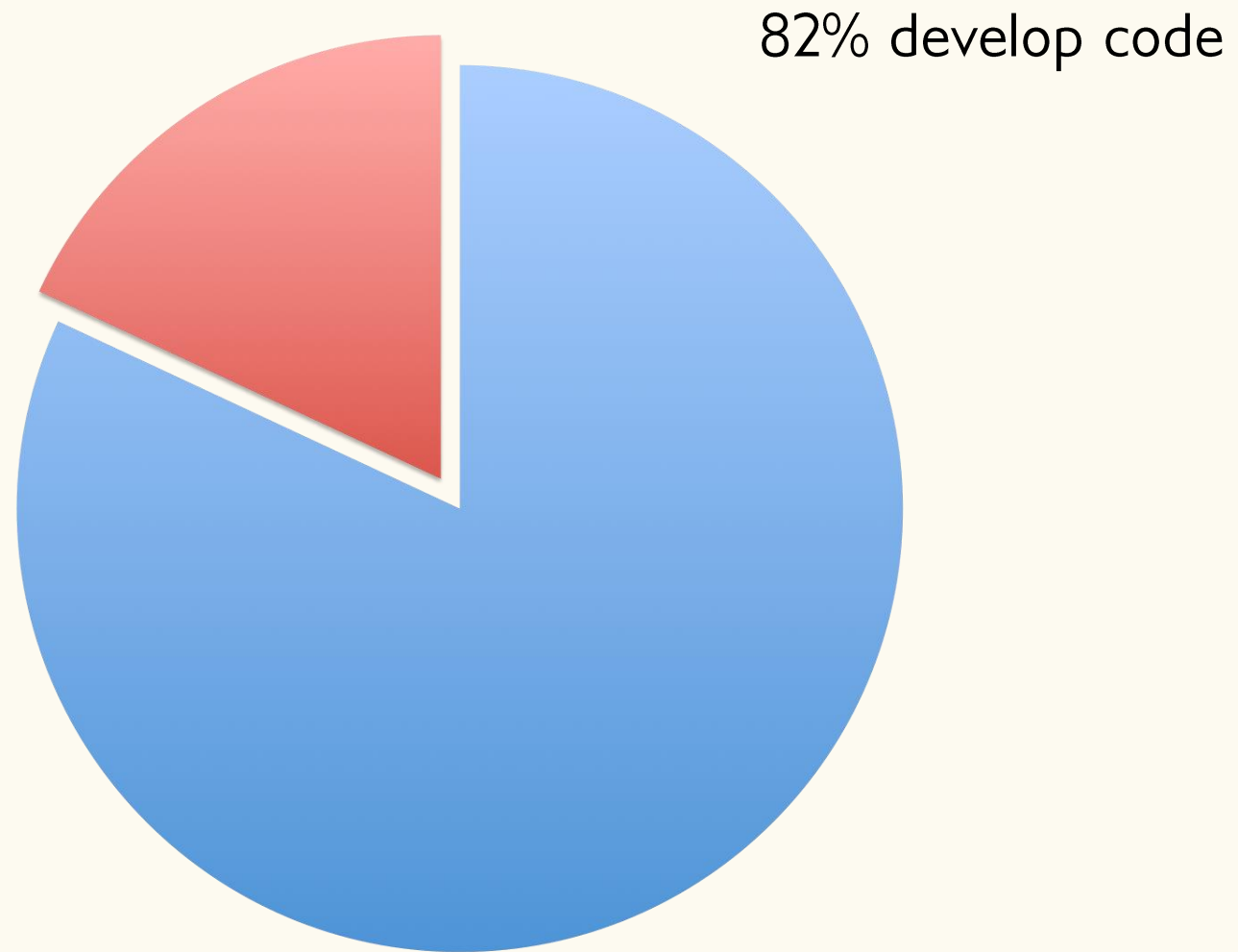- Based at Queen Mary, University of London

The problem

A familiar one:

- Audio and music researchers almost all develop software during their work

- Yet many papers still lack the accompanying code and data

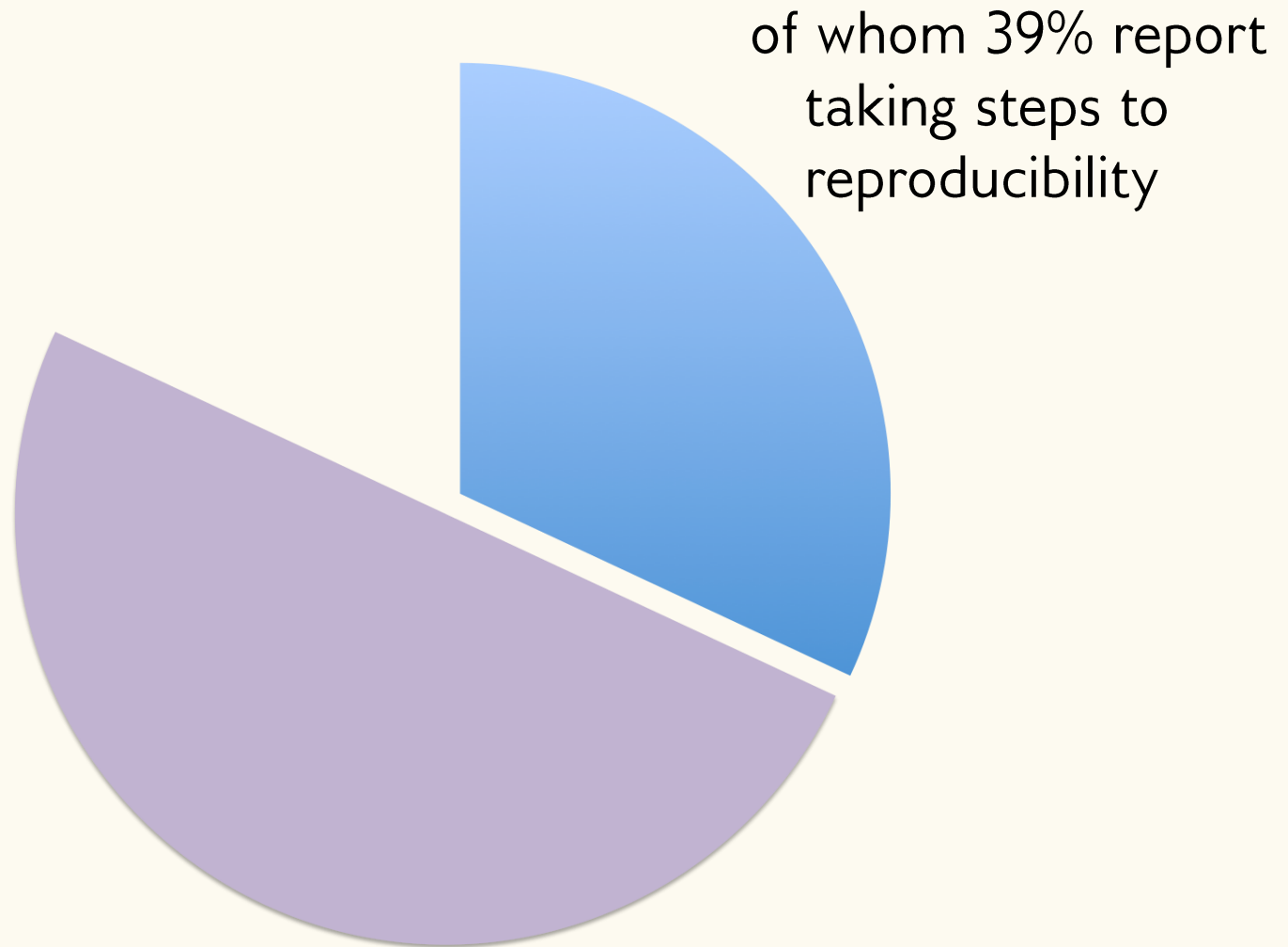We refer to "reproducibility"; transparency and replicability would be a good start

Survey 2010–2011

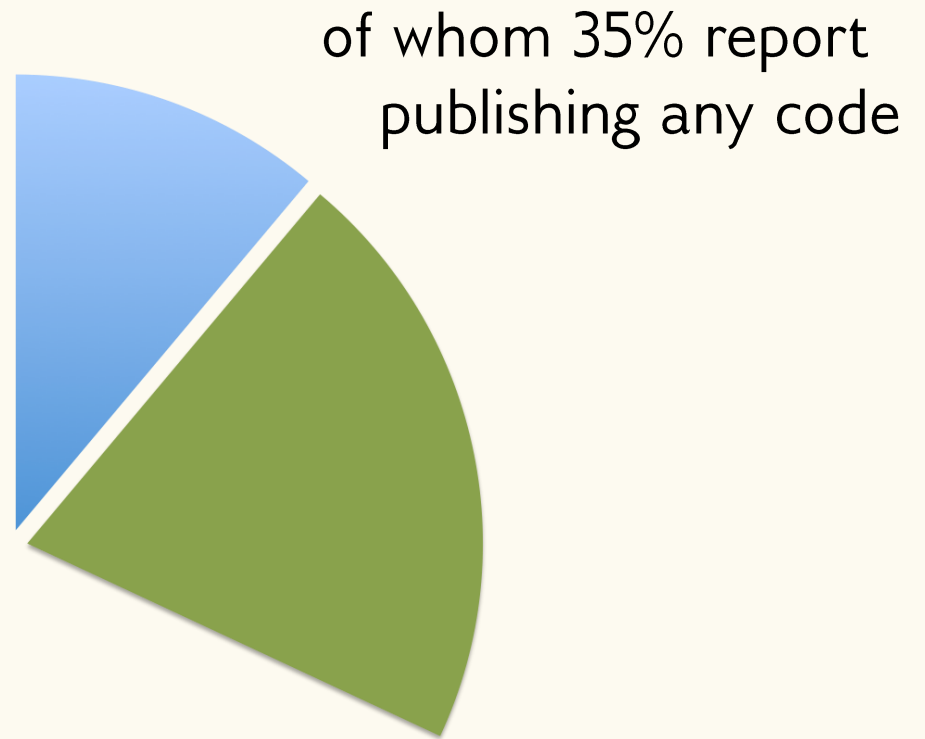82% develop code

Survey 2010–2011

of whom 39% report taking steps to reproducibility

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Survey 2010–2011

of whom 35% report
publishing any code

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Survey 2010–2011

That's 11% of the whole

Barriers to publication and reuse

1. Lack of education and confidence with code
2. Lack of facilities and tools
3. Platform incompatibilities
4. **Lack of incentive for publication**

RR Prizes: Motivation

- Promote development and release of sustainable and reusable software associated with published research
- Recognise researchers who take the extra step, or whose work which will enable others to do so
- Offer a really clear short-term incentive

RR Prizes: What we did (and why)

- Broad call for submissions: journal or conference papers, published or pending
- Very little idea what response we might get

"If you have published your software or datasets as part of your audio or music research output, so that other UK researchers can reproduce your results, you could win a prize!"

RR Prizes: Categories and prizes

Journal paper: New submission

Conference paper: New submission

Journal paper: Already published

Conference paper: Already published

Prizes: Article Processing Charge for open access
    publication; travel bursaries; other options

RR Prizes: Categories and prizes

Journal paper: New submission – one entry!

Conference paper: New submission – 3 entries

Journal paper: Already published – 3 entries

Conference paper: Already published – 5 entries

13 entries total (7 from UK) across 10 institutions

5 MATLAB; 3 C/C++; 2 Python; 1 Lisp

Two with no software (datasets only)

RR Prizes: Work and meta-work

Five traditional research papers

Two papers presenting "challenges"

Two presenting software applications

Two reviewing reproducibility of other work

One presenting a newly-compiled test dataset

One presenting a data interchange format

RR Prizes: Judging criteria

– Ease of reproducibility of the results

  → assessed by SoundSoftware (that's us)

– Quality of sustainability planning

  → assessed by the Software Sustainability Institute

– Potential to enable high quality research in the UK audio and music research community

  → assessed by external reviewers

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How reproducible were they?

Somewhat... with a number of fiddly details!

- Hard-coded paths for dependency files and scripts (/home/myname/test1/data.csv)

- MATLAB version incompatibilities, missing Python modules

- Public datasets gone missing

- Randomised test datasets, random matrix initialisers, etc

Good practices:

- Publishing via e.g. github or our own code site (5 submissions)

- Script to test the environment is set up correctly (1 submission)

- Scripts as used when assembling the actual paper!

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Prize winners

Majdak, P., et al, *Spatially Oriented Format for Acoustics: A Data Exchange Format Representing Head-Related Transfer Functions*

Sturm, B. L., et al, *Comments on "Automatic Classification of Musical Genres Using Inter-Genre Similarity"* – and two other papers

Giannoulis, D., et al, *A Database and Challenge for Acoustic Scene Classification and Event Detection*

Raffel, C., and Ellis, D., *Reproducing Pitch Experiments in "Measuring the Evolution of Contemporary Western Popular Music"*

Next round

Tie-in with Audio Engineering Society
53rd Conference, on Semantic Audio (London, January 2014)

- Prize submission deadlines coordinated with the AES

- Hints for reproducible publication available before conference deadline

- Try to encourage people to think about this as they prepare their submissions

What we'll do differently

Separate "reproducible" papers from "enabling" ones

- All four prizes, and one of our two honourable mentions, went to "enabling" papers or meta-papers

More upfront hints about how to test your work

- Use a virtual machine image

- Check documentation etc (SSI checklist)

- Ask a friend to try it!

Many thanks

To the sustainability panel of the Software Sustainability Institute:

Tim Parkinson, Arno Proeme, Neil Chue Hong

See our site for more information about the prizes!

– http://soundsoftware.ac.uk/rr-prize

Questions…?

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