Three tools to help you navigate the literature

Workshop — ACIS-WS-03

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Outline

1. Introduction and entry survey
2. Your first few searches — *LitBaskets*
3. Permuting your search — *PermuSearch*
4. Check-in, and demo of PermuSearch
5. Break
6. Try *PermuSearch* yourself
7. PermuSearch survey
8. Managing your workflow — *CoLRev*
9. Conclusion

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1. Introduction and entry survey

When do we navigate the literature?

- Familiarising with relevant ongoing academic discourse
- Identifying research questions, relevant theories and methods
- Examining past responses to research questions
- Performing a meta-analysis
- Identifying key authors or journals
- Evaluating literature bibliometrically

Navigating the literature may thus be

- Broad & exploratory vs narrow & focused
- Organic and informal vs systematic and formal
- Focused on a sample vs focused on completeness

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Common difficulties in scoping searches:

- *Which search platform?*
- *Which venues?*
- *Which keywords?*

Common difficulties in evaluating searches:

- *There are too many results!*
- *There are many irrelevant ones!*
- *I feel overwhelmed!*
- *I feel lost!*
- *Am I missing something?*
- *How do I manage the workflow?*
- *How to work collaboratively?*

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Using search engines and databases

AIS e-Library, Google Scholar
to get 'inclusive' results

Scopus, Web of Science
to filter, refine, analyze results

And using specialised tools, such as

Litbaskets.io
to target the right set of venues

PermuSearch
to compare many queries

CoLRev
to collaborate on literature reviews

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Using search engines and databases

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Scopus, Web of Science
to filter, refine, analyze results

How about you?
Do you have these difficulties?
What tools do you use?
What do hope to get out of today's workshop? (shared on screen)
Fill out a quick survey at:
tinyurl.com/acistools

Survey results

"What do you hope to get out of today?"

Answers to be fetched from Qualtrics

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Your first few searches:
LitBaskets

2. Your first few searches — LitBaskets

AIS Basket of 8 journals

AIS eLibrary

AIS List of 11 journals

Scopus

EBSCO Business Source

Google Scholar

← too **few** results ——————————————— too **many** results →

2. Your first few searches — LitBaskets

AIS Basket of 8 journals

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EBSCO Business Source

Google Scholar

LITBASKETS

too **few** results

too **many** results

www.litbaskets.io

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The Index of Information Systems Journals
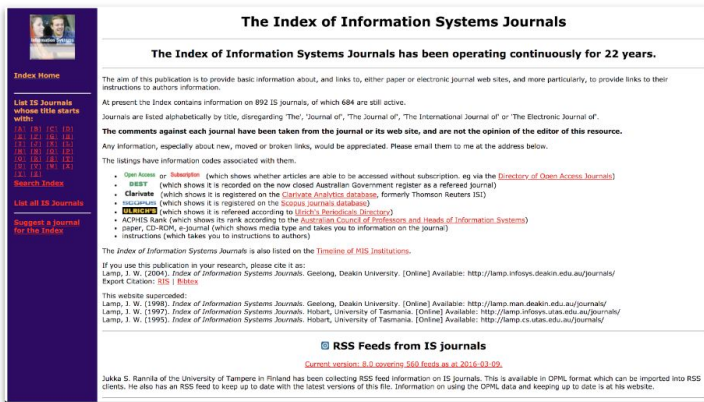
John Lamp's List (2004; 2013)

Analysis by Stewart et al (2017)
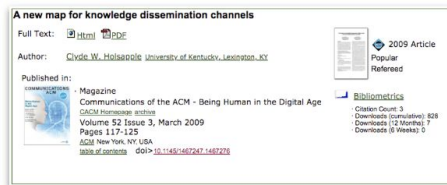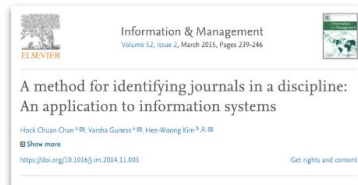
Holsapple (2009)

Chan et al. (2015)

Analysis by
Willcocks et al
(2008)

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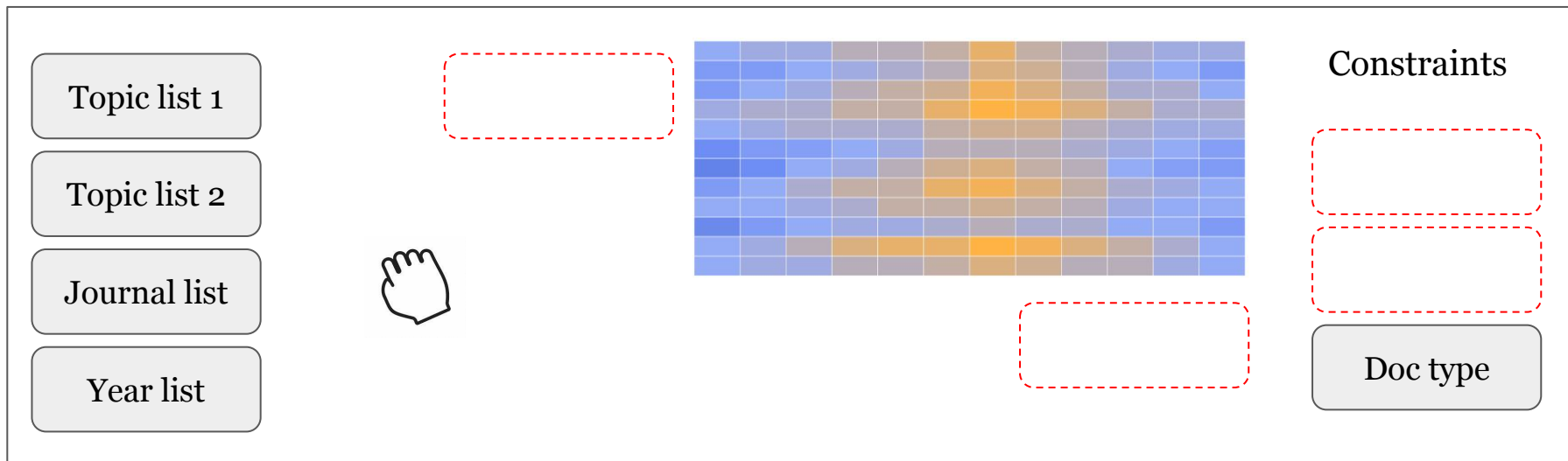# 2. Your first few searches — LitBaskets

www.litbaskets.io

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Permuting your search:
PermuSearch

4. Permuting your search — PermuSearch

PermuSearch automates the querying of Scopus with 2-dimensional permutations of search terms, such as topics, years, and journals.

It is deployed in an online app, and works with XLSX input and output.

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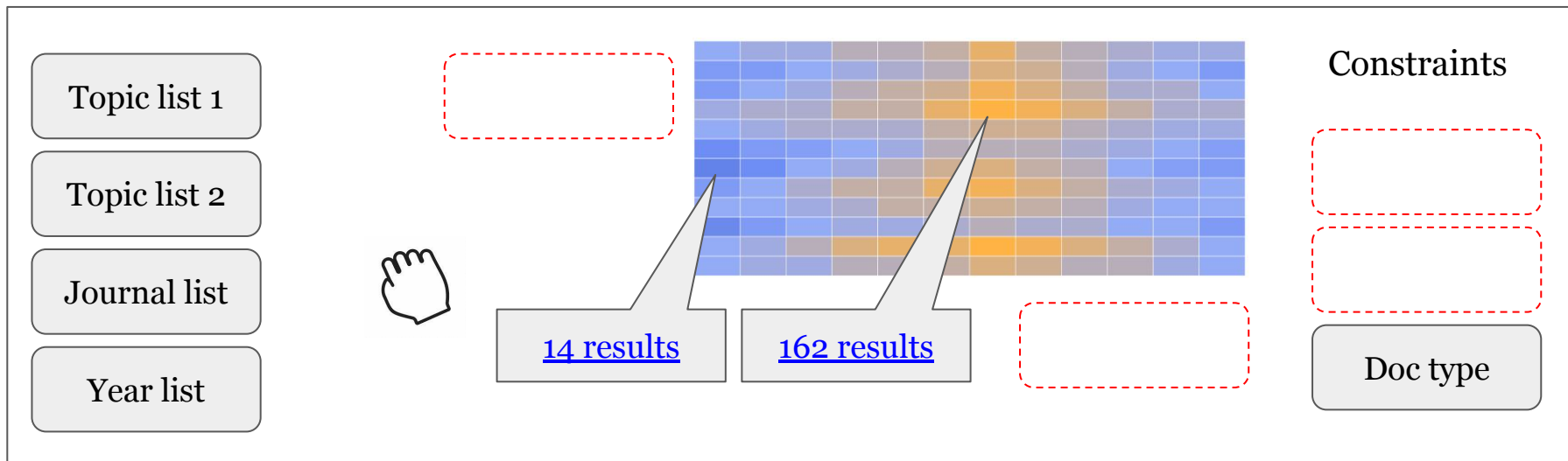It is deployed in an online app, and works with XLSX input and output.

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4. Permuting your search — PermuSearch

Example 1: *how do the IS literatures on "business process automation" and "digital transformation" and … develop over time?*

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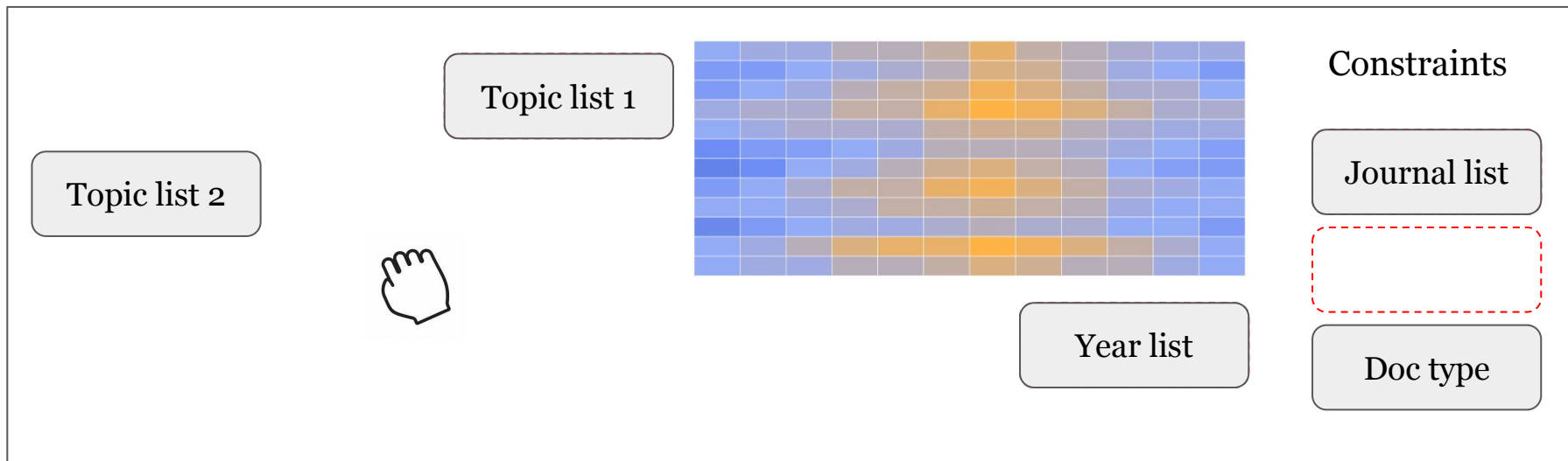
4. Permuting your search — PermuSearch

Example 2: *how often are the IS literatures on "business process automation" and "digital transformation" referring to the "Technology Acceptance Model" or "UTAUT" or …?*

Topic list 1

Constraints

Journal list

Year list

Topic list 2

Doc type

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4. Permuting your search — PermuSearch

Example 3: *how often are the IS literatures on "Technology Acceptance Model" or "UTAUT" referring to "surveys" or "experiments" or "SEM" or ...?*

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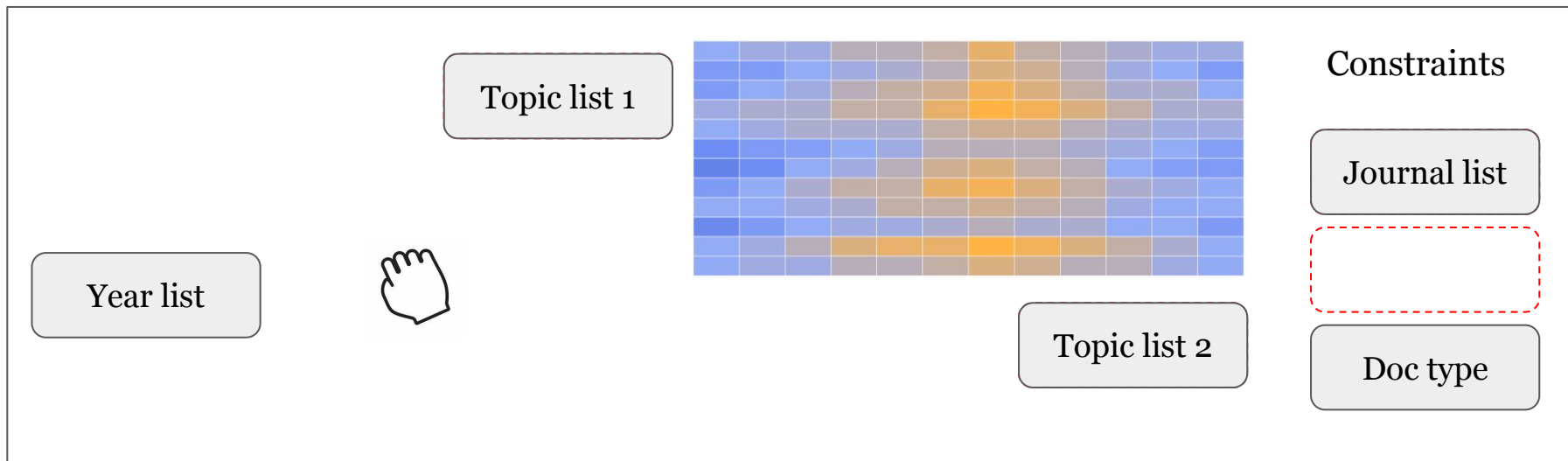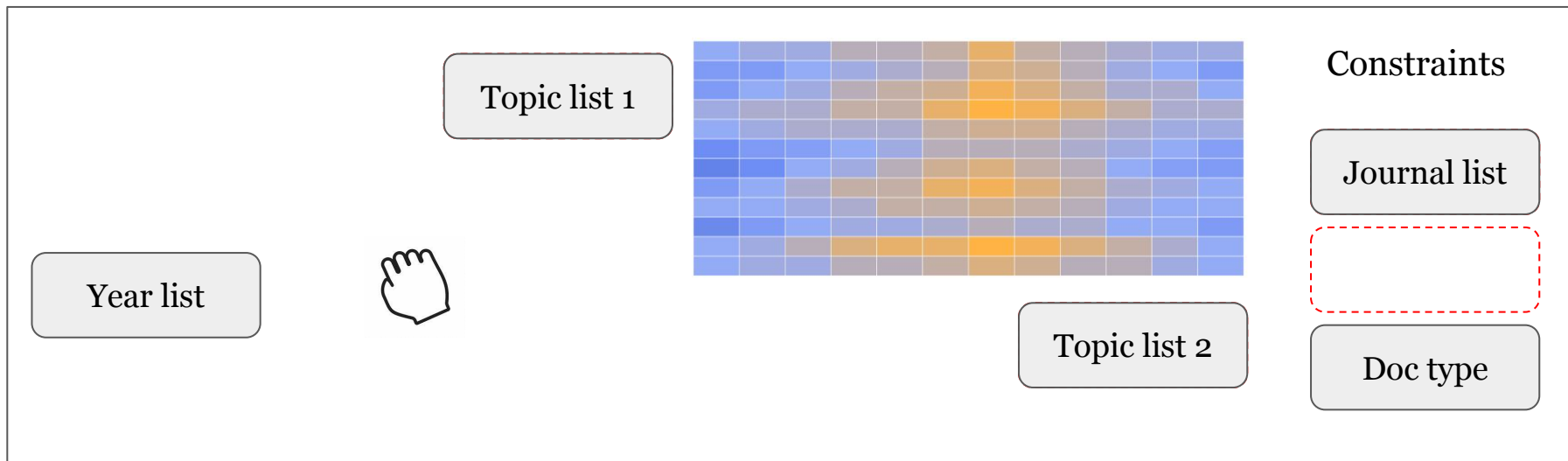*Australasian Conference on Information Systems, Wellington 2023*

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4. Permuting your search — PermuSearch

Example 4: *how often are the IS literatures on "business process automation" and "digital transformation" referring to "surveys" or "experiments" or "SEM"?*

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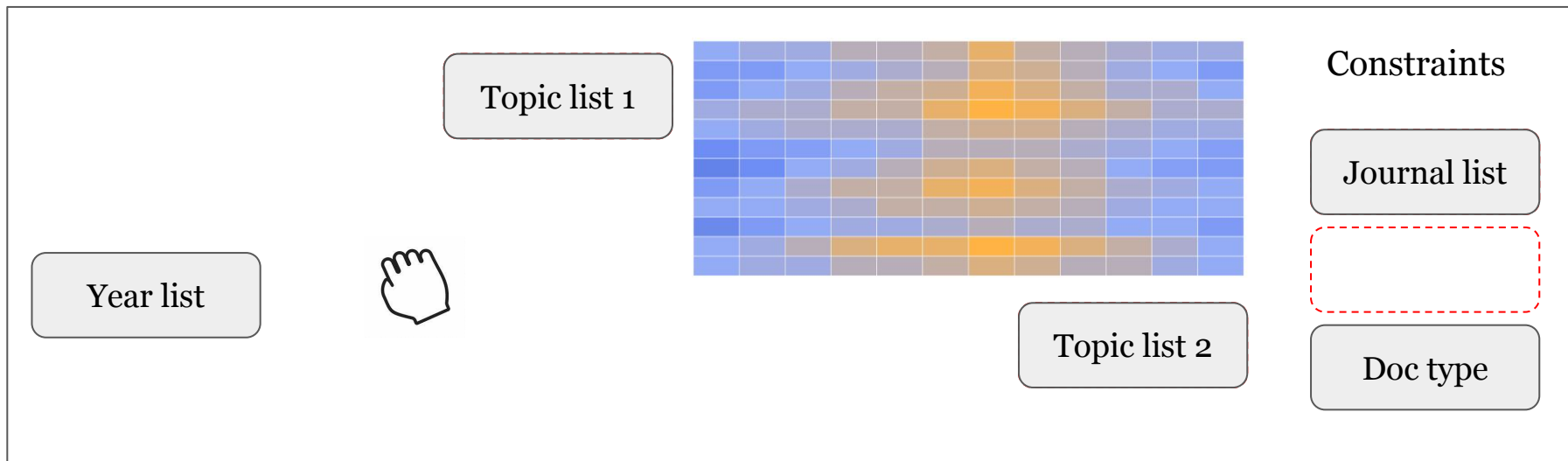
4. Permuting your search — PermuSearch

Example 5: *what are the prevalence trends in each of the journals on "business process automation" OR "digital transformation"?*

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4. Permuting your search — PermuSearch

User steps

Download and open the template in xlsx

Specify input in five template sheets:
1. List of search terms (optional)
2. List cross search terms (optional)
3. Select journals (optional)
4. Select years (optional)
5. Select matrix dimensions X and Y, and define applicable constraints (e.g. years, journals, article type, search terms if not already defined as X or Y dimension)

Save and upload file; specify Scopus API key.

Run the analysis and wait for a download.

Inspect results and perform analysis, e.g. click to rerun cell query in browser, perform calculations, and generate visualisations.

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R Script steps

Load packages xml2, httr, openxlsx.

Load sheets from input file, load API key

Set variables according to input parameters, and write empty result matrix based on length of X and Y.

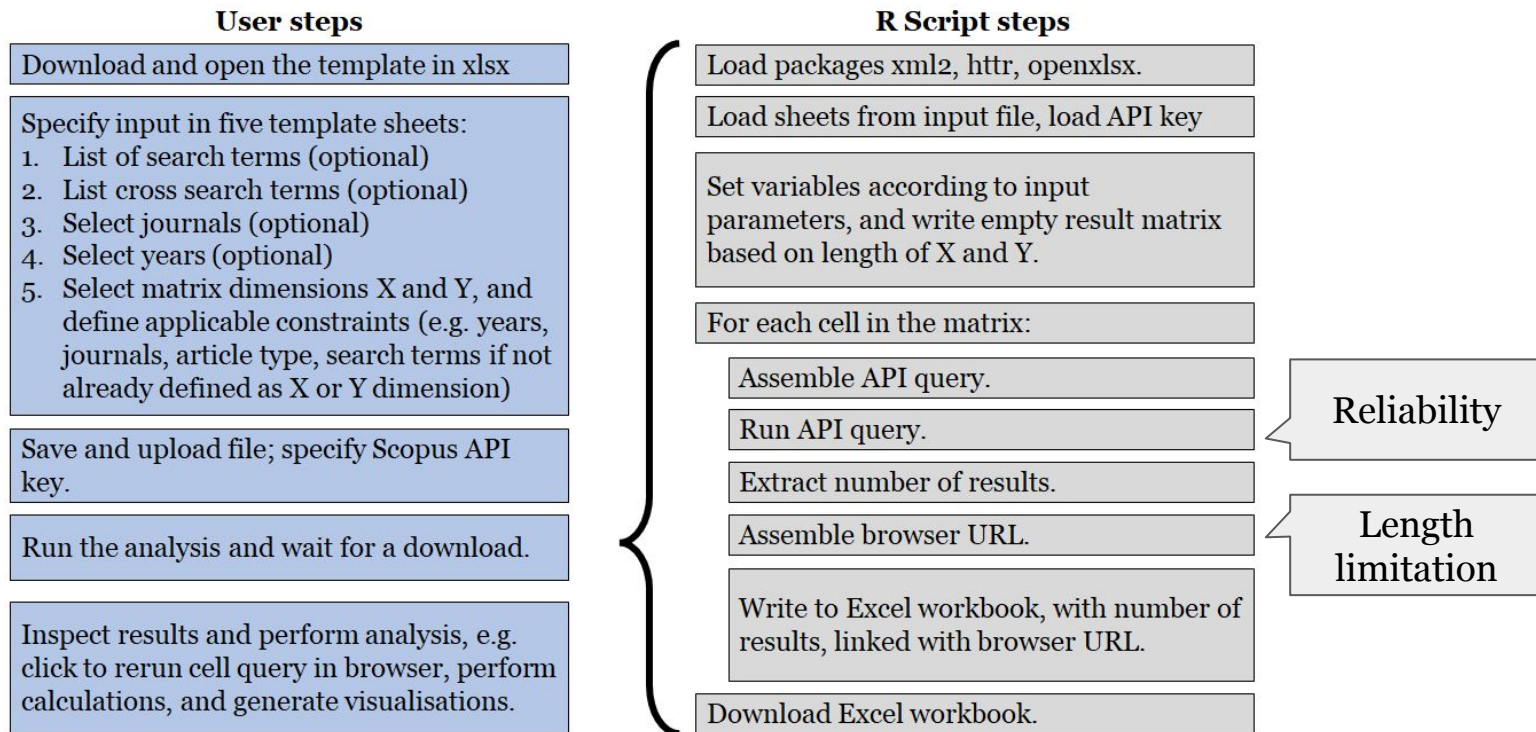For each cell in the matrix:

Assemble API query.

Run API query.

Extract number of results.

Assemble browser URL.

Write to Excel workbook, with number of results, linked with browser URL.

Download Excel workbook.

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4. Permuting your search — Permusearch

User steps

- Download and open the template in xlsx

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- Save and upload file; specify Scopus API key.

- Run the analysis and wait for a download.

- Inspect results and perform analysis, e.g. click to rerun cell query in browser, perform calculations, and generate visualisations.

R Script steps

- Load packages xml2, httr, openxlsx.

- Load sheets from input file, load API key

- Set variables according to input parameters, and write empty result matrix based on length of X and Y.

- For each cell in the matrix:

  - Assemble API query.

  - Run API query.   — Reliability

  - Extract number of results.

  - Assemble browser URL.   — Length limitation

  - Write to Excel workbook, with number of results, linked with browser URL.

- Download Excel workbook.

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Next steps

4a. Check-in: Any questions so far?

- Clarification needed?
- Too fast / too slow?
- ...

4b. Live demonstration on permusearch.com

5. Break

6. Try *PermuSearch* yourself; if above link doesn't work:

- Try: tinyurl.com/permusearch
- (Or use eduroam?)
- R code is available on github: https://github.com/spzwanenburg/PermuSearch/ to perform it on your own machine.

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Survey part 2/2

Please wrap up your trial of PermuSearch.

(To continue use PermuSearch after today, please register a Scopus API key which is for free for most university accounts.)

PermuSearch is young and in development. It needs user feedback to mature.

Fill out a quick survey at:
tinyurl.com/navitool

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Managing your workflow:
CoLRev

Before we continue with this section…

- This section does not require you to work on your laptop 😊😊
- Quick check-in about Terminal
- Quick note about GitHub — what is it? + our repos
  - 'By the community, for the community'
  - These tools are *gratis* and *libre* (spirit of open source)
- Quick note about Bandara et al. (2015) *CAIS*
- Quick note about Wang (2022) *ACIS*

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What is CoLRev?

README.md

Collaborative Literature Reviews (CoLRev)

COLLABORATIVE LITERATURE REVIEWS

DOI 10.5281/zenodo.10039289 | release v0.10.4 | python 3.8 | 3.9 | 3.10 | 3.11 | license MIT | pre-commit enabled | docs passing

build passing | pre-commit.ci passed | coverage 70% | code quality A | last commit november | downloads/month 872

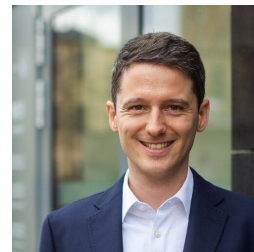openssf best practices passing | archived repository | all contributors 16

Summary

CoLRev is an open-source environment for collaborative literature reviews. It integrates with differerent synthesis tools, takes care of the data, and facilitates Git-based collaboration.

To accomplish these goals, CoLRev advances the design of review technology at the intersection of methods, design, cognition, and community building. The following features stand out:

- An open and extensible environment based on shared data and process standards
- Builds on git and its transparent collaboration model for the entire literature review process

https://github.com/CoLRev-Environment/colrev

Dr. Gerit Wagner, University of Bamberg, Germany

Dr. Julian Prester, University of Sydney, Australia

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PRISMA flowcharts

Image source: [Meinck (2022)](#)

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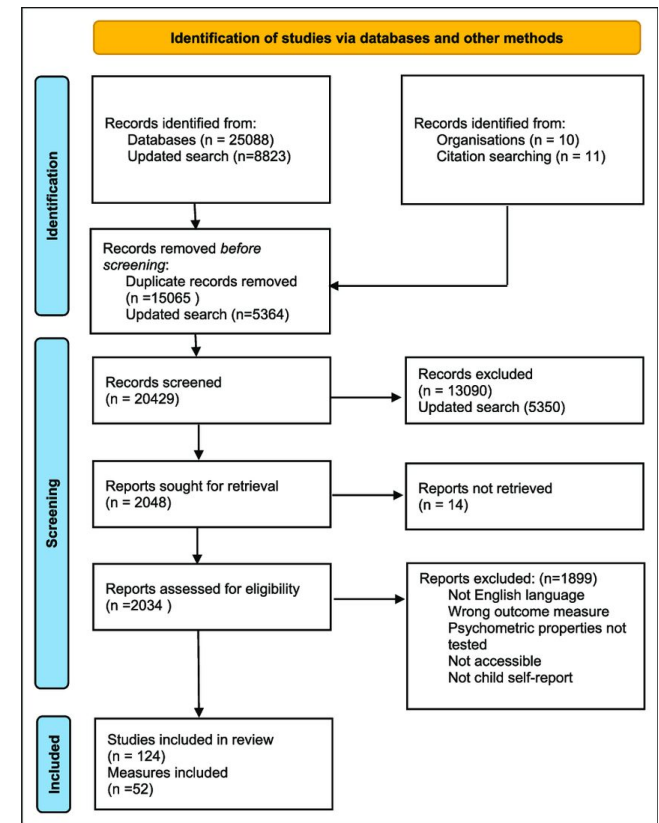
I usually say 'like Covidence, but...'

- Free, *gratis* (vs. ~$467 NZD for 1 user per year)
- Free, *libre* (open source)
- By our community, for our community
- Transparent open science
- Easily extendable
  - Entire database is essentially a single plaintext .bib file + a few config files)
- But also 'young and in development' 😊
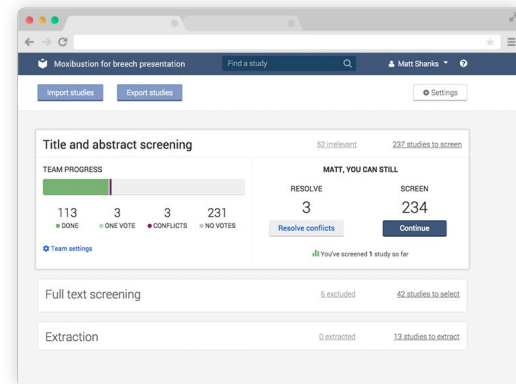
↑ Covidence

↑ CoLRev

Version-controlled, plaintext-serialised data*

* See Wang B., 2022, 'Programming for Qualitative Data Analysis: Towards a YAML Workflow',
paper presented at the Australasian Conference on Information Systems (ACIS), Melbourne

*Qualitative
research*

*Quantitative
research*

*Literature
review*

```
... other code here ...
 1      */
 2     public static ImageIcon getImageIcon(String path)
 3     {
 4  -      java.net.URL imgURL = GuiImporter.class.getResource(path);
 5  -
 6  -      if (imgURL != null)
 7  +      if (path == null)
 8         {
 9  -           return new ImageIcon(imgURL);
10  +           log.error("Icon path is null");
11  +           return null;
12         }
13  -      else
14  +
15  +      java.net.URL imgURL = GuiImporter.class.getResource(path);
16  +
17  +      if (imgURL == null)
18         {
19             log.error("Couldn't find icon: " + imgURL);
20  -       }
21             return null;
22         }
23  +      else
24  +           return new ImageIcon(imgURL);
25  +  }
26
27      /**
... other code here ...
```

(a) *Myers'* diff

↑ Image source: Nugroho et al. 2020
(doi: 10.1007/s10664-019-09772-z)

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2-minute video from the CoLRev team

https://www.youtube.com/watch?v=yfGGraQC6vs

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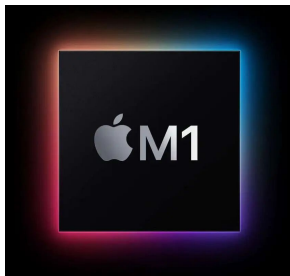
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Blair's *unofficial* tips for CoLRev

- At the moment, CoLRev requires a more technical user than is the case with LitBaskets and PermuSearch
  - UNIX/Linux terminal (bash/zsh), Python (pip, "venv" virtual environments)
- Possible use cases:
  - You are personally already familiar with those, or would like to learn
  - Your team is already familiar with those, or would like to learn
  - You've an RA, Hons, Masters or PhD student who scored well in Programming courses
  - You really do not want to lock in your data to a subscription product…
  - You want your data to be more well-organised than Excel spreadsheets…
  - You want to support something 'by our community, for our community' 😊

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Blair's *unofficial* tips for CoLRev setup

Blair's unofficial tips for **Apple Silicon Mac** users (as at 4 Dec 2023):

- brew install python@3.10
- python3.10 -m venv .venv_acis2023
- source ./.venv_acis2023/bin/activate
- python3 -m pip install --upgrade pip
- python3 -m pip install --upgrade colrev==0.10.4
- Manually replace "lingua.builder" with "lingua"
- *cd* into relevant folder and run today's demo (next slide)
- Run `deactivate` when done
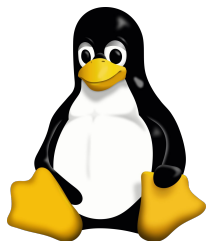
Linux users should be fine based on their distro of choice (I personally like Fedora); **Windows** users have a mostly stable experience with Ubuntu on WSL

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Today's CoLRev quick demo

- **colrev init**
  - Edit .gitignore to exclude .DS_Store
  - Edit ./.pre-commit-config.yaml
- **colrev load**
  - Run and observe instructions
  - Search "Zoom Fatigue" on Litbaskets and dblp
  - Move .bib files to data/search
  - Run colrev load again
- **colrev screen**
  - Run and follow instructions for adding an exclusion criteria (e.g., *irrelevant*)
  - Make a commit
  - Manually edit records.bib to set colrev_status to rev_included or rev_excluded, with the latter being also assigned screening_criteria = (e.g.,) *irrelevant*=out
- **colrev data --add colrev.prisma**
- **colrev data**

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Extending functionality by parsing *records.bib*

In less than 10 lines of Python code, you can convert CoLRev's *records.bib* to a CSV file

Custom visualisation
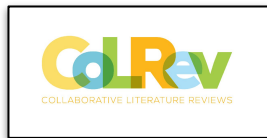
```python
import bibtexparser
import pandas as pd

dict_bibdata = {}
with open('../data/records.bib') as bibtex_file:
    bibdb = bibtexparser.load(bibtex_file)
    dict_bibdata = bibdb.entries
    df_bibdb = pd.DataFrame(dict_bibdata)
    df_bibdb.to_csv("records.csv", index=False)
```

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Conclusion

8. Conclusion

Literature searches are done in a wide range of contexts and use cases.

They can be challenging when

- The relevant literature is large and growing;
- The relevant literature is ill-defined;
- The process is iterative and hard to keep track of.

Many topics within IS have fuzzy boundaries, like our entire discipline.

The tools we have presented were all separate initiatives to help researchers structure their searches, to perform them with greater confidence.

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Reflective Discussion

First time this workshop has run!

- Did you get what you had hoped to get out of the workshop?
- Where do you see possible improvements?
  - To the workshop
  - To the tools (Permusearch, LitBaskets, CoLRev)

Further feedback:

Feel free to approach us afterwards 😊 Our email addresses are on the final slide.

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Thank you for your time today

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TODO: What is our stance on…

ResearchRabbit

Eugene AI

Perplexity, elicit

Connected Papers

iris.ai

…etc??

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