

Scientific Writing

3rd Edition

Session III

Using Rayyan for systematic reviews

Introduction

— — —

- What is a systematic review?
- What does “systematic” imply?
- What will we do today?

Background

Systematic Review - A Review

1. Problem formulation

- a. Objective
- b. Research questions

2. Article retrieval

- a. Inclusion and exclusion criteria
- b. Databases
- c. Query
- d. Retrieval

3. Article selection

- a. Importing to Rayyan
- b. Inviting collaborators
- c. Duplicate removal
- d. Independent review
- e. Exporting to Mendeley

4. Data extraction and synthesis

Systematic Review - A Review

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Problem formulation

Problem formulation

Objective

— — —

- What are we trying to achieve with this review?

Problem formulation

Objective

— — —

- What are we trying to achieve with this review?

“Systematically review the literature on the use of Artificial Intelligence (AI) algorithms for the design and development of software architectures”

Problem formulation

Research Questions

— — —

1. Which AI algorithms are most commonly used?
2. When have they become more popular?
3. What impact do they have on software architecture design and development?

Article retrieval

Article retrieval

Inclusion criteria

— — —

1. Must analyse/study the use of an AI algorithm
2. Must apply such algorithm to the design or development of software architectures

Article retrieval

Exclusion criteria

— — —

1. Does not analyse/study the use of an AI algorithm
2. Does not apply such algorithm to the design or development of software architectures
3. Is not in English
4. Is not an original research article
5. Is not a journal article

Article retrieval

Databases

— — —

Required functionality:

- Advanced search
 - Keywords
 - Filters
- Reference exportation
 - Best if in bulk

Examples:

- **ACM Digital Library**
- Web of Science
- Scopus
- Science Direct
- IEEE Xplore
- PLOS
- PubMed
- ...

Article retrieval

Query

— — —

- Precise
 - Minimize the number of articles that are “out of scope”
- Broad
 - Minimize the probability of leaving out relevant articles
- Arguably the most important step in the process

Article retrieval

Query

— — —

- In our case, we have two main axes:
 - Artificial Intelligence
 - Software architecture
- Develop a set of keywords for each of the axes
- We are interested in articles that include keywords from **both** of the axes

Article retrieval

Query

— — —

Artificial Intelligence

- artificial intelligence
- AI
- intelligent algorithm
- machine learning
- deep learning
- Deep neural network

Software architecture design

- software architecture design
- software architecture development
- software architecture

Article retrieval

Query

— — —

Artificial Intelligence

- artificial intelligence
- AI
- intelligent algorithm
- machine learning
- deep learning
- Deep neural network



in title/abstract

AND

Software architecture design

- software architecture design
- software architecture development
- software architecture



in title/abstract

Article retrieval

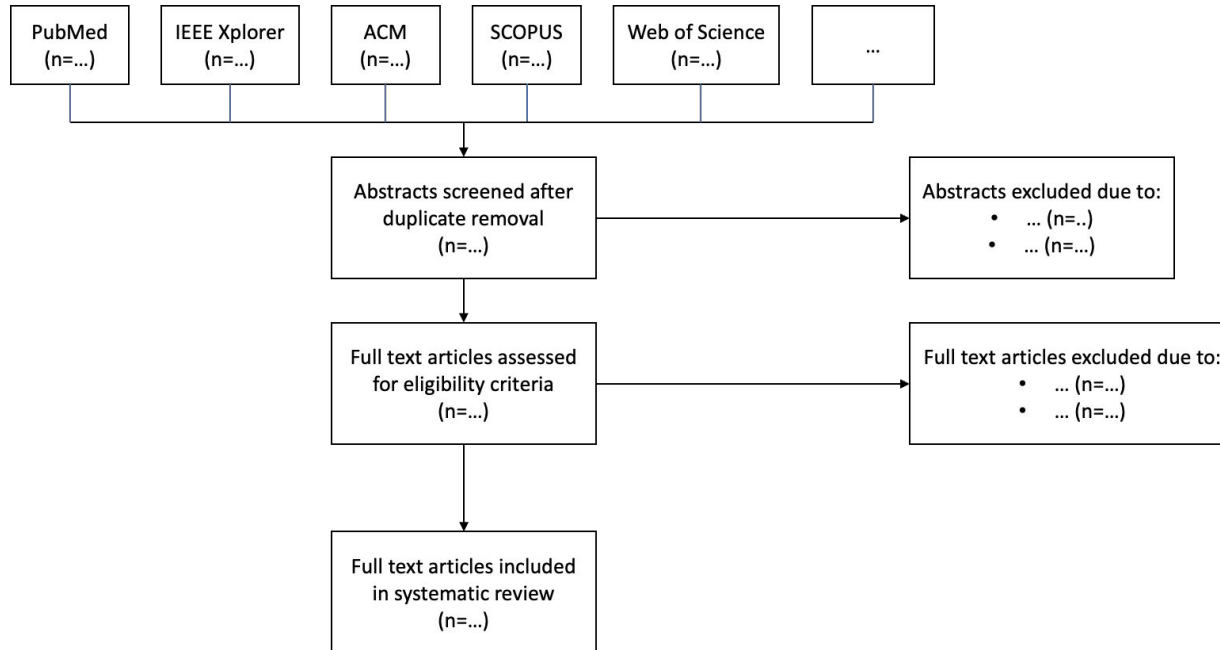
Retrieval

— — —

- Apply the query to the database advanced search tool
- Select all articles found with the query
- Export references to file

Article selection

Article selection



Article selection

Importing to Rayyan

— — —

- Create systematic review project in Rayyan
- Import reference file (obtained in the previous step)
- Might be slow ...

Article selection

Inviting collaborators

— — —

- A systematic review requires, at least, 2 independent reviewers
- Rayyan lets you invite them to your project
- Remember to keep the blind ON during review processes

Article selection

- Duplicate removal
- Independent title and abstract screening
 - Keywords for “include”
 - Keywords for “exclude”
 - Add exclusion reasons for selection summary
- Conflict resolution
- Iterate previous steps with full-text
- Export agreed selection of “included” articles

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— — —

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Thank you!