

Systematic Literature Review

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Agenda

- ▶ What's a SLR?
- ▶ Why to perform a SLR?
- ▶ Methodology
 - Planning
 - Conducting the review
 - Reporting
- ▶ Lessons Learned

What's a Systematic Literature Review?

- ▶ It's a secondary study that aims to identify, evaluate and interpret all the relevant research made for a particular topic.
- ▶ Rigorous and reliable revision methodology
- ▶ It can be confirmed, audit, and continued.
- ▶ Hence, the experience can be reproduced because it used an specific search protocol.

- ▶ It's different of a (simple) literature review because it relays in a strict methodology. Nonetheless, exploratory analysis provides elements to plan Systematic Literature Reviews.

Why performing a SLR?

▶ Motivations

- Sum up existing evidence about a technology, benefits, limitations, related methods, and so on.
- Identify gaps in the current state of the art to suggest future works
- Provide basis for new research activities

▶ Advantages

- More consistent results
- More reliable evidences
- Guarranty of coverage about the issue
- Possibility of reproduction
- Documentation

▶ Disadvantages

- More effort to perform (some parts) of the literature revision due to the documentation requirement

Methodology

- ▶ Planning
 - ▶ Conducting the review
 - ▶ Reporting the review
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- ▶ All the forms mention in this material as well as some examples and Bibliography can be found in:
<https://sites.google.com/site/sritavre>

Planning

- ▶ What is the objective of the review?
 - Which are the research questions?
- ▶ Which are the sources? Why those sources?
 - Search strategy? Scope?
- ▶ Which are the inclusion/exclusion criteria?
 - Studies quality metrics?
- ▶ What is the data to be extracted from the studies?
 - Selection strategy, synthesis strategy
- ▶ Document: Review Protocol specifies the method to be used in the review

Conducting the review

1. Identifying the research: search strategy
 - Identifying previous SLR
 - Evaluate the volume of the relevant documents to analyze
 - Analyze the potential sources for the research
 - Exploratory searches with potential keywords
 - Consulting expert researchers of the area
- Documents: Record for every recommended source and exploratory search with Conduction Form.

Conducting the review

2. Study Selection: selection strategy
 - Definition of Inclusion/Exclusion criteria
 - Reading critical information and applying the criteria
 - Discussion and agreement about debatable studies
 - Consulting expert researchers of the área and the SLR team
- Documents: Record the results of applying the selection criteria with the reasons for the decision in the Selection Studies Form.

Conducting the review

2. Data Extraction:

- Define which are the elements within the studies relevant to gather for the SLR
- Define categories to cluster relative scattered concepts
- Documents: Data Extraction Form.

Conducting the review

2. Data Synthesis:

- Sum up the elements gathered from the studies
 - Relate the elements to the research questions
 - Elaborate Graphs and Tables comparing different elements
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- Documents: Different sheets based in the Data Extraction Form.

Reporting the Review

- ▶ Organize the information gathered
- ▶ Answer the research questions presented in the protocol
- ▶ Elaborate the conclusions
- ▶ Highlight critical information:
 - Information you expected to find that gone missing
 - Information you do not expected to find
 - Evolutionary changes and Eventual contradictions
 - Future Works
 - Recommendations for future research in the area

References

- ▶ Nunes, Fatima L.S. “Revisão Sistemática” USP–EACH.
- ▶ Biolchini, J., Mian, P. G., Natali, A. C. C., and Travassos, G. H. (2005). Systematic review in software engineering. Technical report, RT-ES 679/05 System Engineering and Computer Science Dept., COOPE/UFRJ.
- ▶ Kitchenham, B. A. (2004). Procedures for performing systematic reviews. Keele University.
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