

Rapid Review on Micro Frontends Anti-patterns

This document presents a Rapid Review (RR) conducted by the authors of the paper titled *A Catalog of Micro Frontends Anti-patterns*. RRs are lightweight secondary studies focused on delivering evidence to practitioners in a timely manner [1]. We aimed to verify if there is any Micro Frontends (MFE) anti-patterns proposal in literature. The subsequent sections detail the methodology employed for conducting this review.

1 Goal and Research Question

This RR is undertaken to identify MFE anti-patterns documented in the scientific literature. To achieve this objective, we formulated the following research question:

- **Research Question (R.Q):** Which are the micro frontend anti-patterns reported within the literature?

2 Search Strategy and Selection Procedure

We designed a research string to gather all works related to MFE and anti-patterns, considering all possible variations in the terminology. The resulting search string is:

("microfrontend" OR "micro frontend" OR "micro-frontend" OR "mfe") AND ("antipattern" OR "anti-pattern" OR "anti pattern")

After defining the search string, the selection procedure followed the steps: (1) search and extract the studies in the ACM Digital Library¹, IEEE Xplore² and Google Scholar³ using the search string; (2) eliminate duplicate studies; and (3) filter studies by title and abstracts using inclusion and exclusion criteria. We included the following Inclusion Criteria (IC):

- **IC1:** The paper must be in the context of MFE development;
- **IC2:** The paper propose or review MFE anti-patterns;

We also added the following Exclusion Criteria (EC):

- **EC1:** The paper is not a peer-reviewed publications (including preface, book, editorial, Master's thesis, Graduate thesis, poster, panel, lecture, roundtable, workshop or demonstration);
- **EC2:** The paper is not written in english;
- **EC3:** The paper is a duplicate;
- **EC4:** The paper does not attend any of the inclusion criteria;

¹<https://dl.acm.org/>

²<https://ieeexplore.ieee.org/>

³<https://scholar.google.com/scholar>

3 Conducting the Rapid Review

This section presents the papers retrieved from each digital library. During this process, we were able to set filters for publication years from 2019 to 2024.

3.1 ACM Digital Library

We searched the ACM Digital Library and retrieved no articles, as depicted in Figure 1. We performed the search by restricting it to articles published in the last six years (from 2019 to 2024) and applying search strings in the title and abstract as filters.

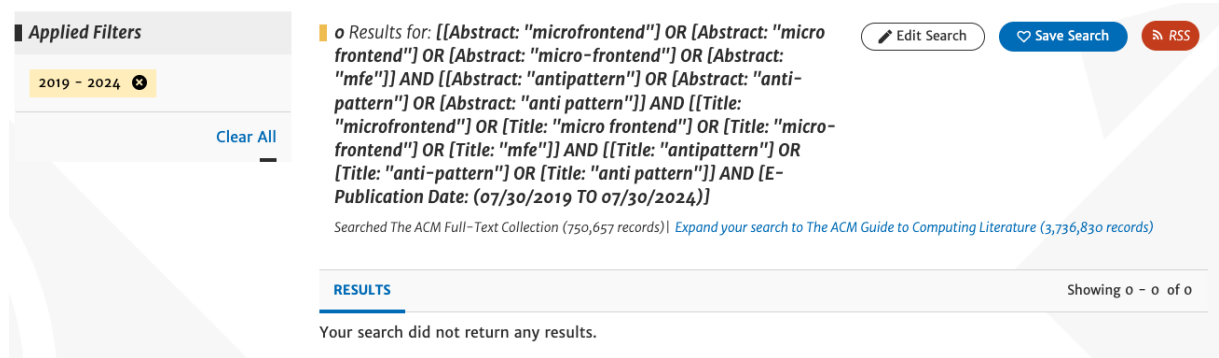


Figure 1: Number of articles returned on the ACM Digital Library.

3.2 IEEE Xplore

We searched the IEEE Xplore Digital Library and retrieved no articles, as depicted in Figure 2. We performed the search by restricting it to articles published in the last six years (from 2019 to 2024) and applying search strings in the title and abstract as filters.

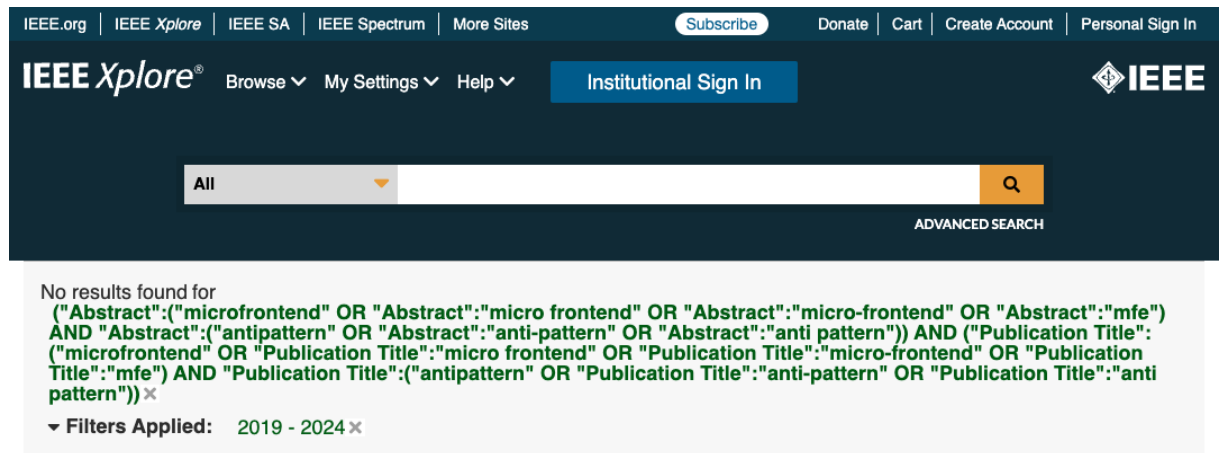


Figure 2: Number of articles returned on the IEEE Xplore Library.

3.3 Google Scholar

We searched the IEEE Xplore Digital Library and retrieved 14 articles, as depicted in Figure 3. We performed the search by restricting it to articles published in the last six years (from 2019 to 2024) and applying search strings in the title and abstract as filters,

as shown in Figure 4. After review all 14 papers, none of them were selected according to the inclusion and exclusion criteria, as shown in Table 1



Figure 3: Number of articles returned on the Google Scholar.

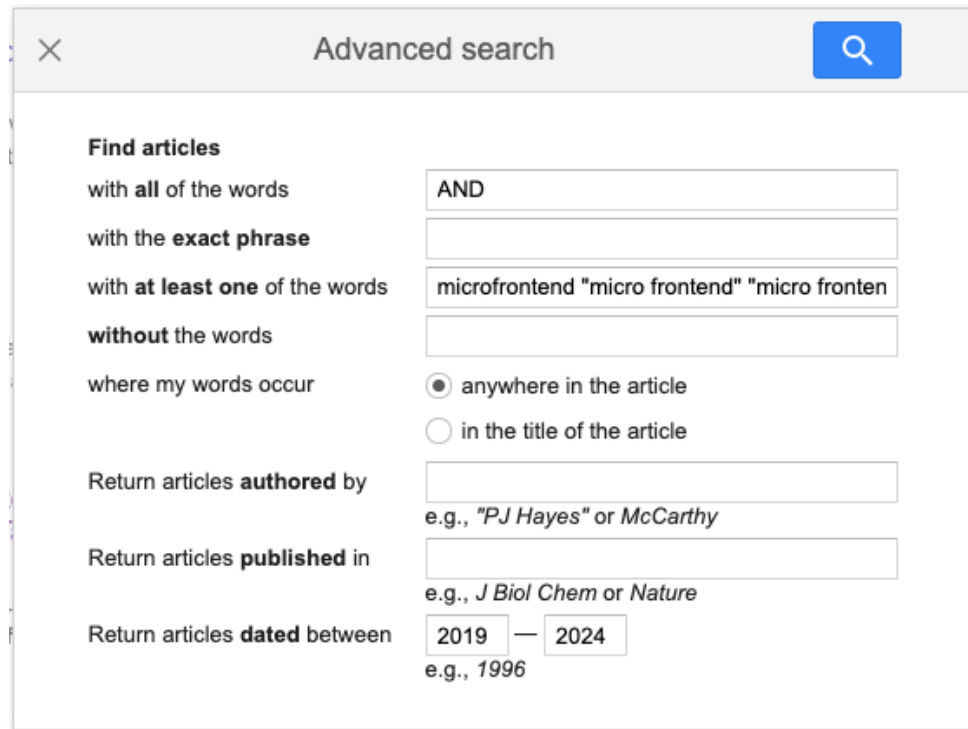


Figure 4: Advanced search in Google Scholar.

4 Results and Conclusion

The rapid review conducted did not identify any existing studies focused on micro frontend anti-patterns, highlighting a significant research gap in the field. This dearth of dedicated research underscores the need for further investigation into this critical area of software development.

Table 1: Summary of papers retrieved from Google Scholar

REF.	Title	Exclusion Reason
[2]	Migration Process from Monolithic to Micro Frontend Architecture in Mobile Applications	Do not propose MFE anti-patterns (EC4)
[3]	Suitability of Micro-Frontends for an AI as a Service Platform	Master's thesis (EC1)
[4]	Building Micro-Frontends	Book (EC1)
[5]	Design Systems for Micro Frontends	Graduate thesis (EC1)
[6]	Modern Software Architecture	Book (EC1)
[7]	A Survey on Microservices Architecture: Principles, Patterns and Migration Challenges	The paper is focused on Microservices anti-patterns (EC4)
[8]	Software Architecture: The Hard Parts	Book (EC1)
[9]	Development of an e-portfolio social network using emerging web technologies	Master's thesis (EC1)
[10]	Design Systems for Micro Frontends	The paper is a duplicate (EC3)
[11]	Building Evolutionary Architectures	Book (EC1)
[12]	Design and Architecture	Book chapter (EC1)
[13]	Collaborative Geovisual Analytics	Book (EC1)
[14]	Forecasting Hourly Solar Radiation Using Artificial Intelligence Techniques	Not related to MFE (EC4)
[15]	Micro frontends numa aplicação de pré-contabilidade	Graduate thesis not written in English (EC1 and EC2)

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