# Generative AI for Requirements Engineering: A Scoping Literature Review

## Brief Summary

This study investigates the application of Generative AI in Requirements Engineering (RE), focusing on how the technology is currently employed to optimize and streamline the RE process. The review aims to determine trends, gaps, and challenges in integrating Generative AI within RE frameworks. Additionally, it evaluates the extent to which Generative AI has been leveraged to address traditional RE challenges like elicitation, refinement, and validation of requirements.

## Researchers

• Jomar Thomas Almonte, Doctor of Engineering (D.Eng) Candidate, Penn State University

• [Collaborators, if any]

## Research Questions

1. To what extent has Generative AI been applied in Requirements Engineering?

a. Which subdomains of RE (e.g., elicitation, validation) are most commonly addressed?

b. What specific Generative AI methods or tools are employed?

c. How frequently do studies involving Generative AI in RE appear, and in which venues (journals, conferences)?

d. Are certain authors, institutions, or regions represented more prominently?

2. What are the benefits and challenges identified in applying Generative AI to Requirements Engineering?

a. Are there recurring themes in how Generative AI is evaluated for RE?

b. How do the outcomes compare across different RE tasks?

3. What gaps exist in current research regarding the integration of Generative AI into RE processes?

## Databases to be Searched

The core databases for requirements engineering and artificial intelligence:

• Scopus  
• IEEE Xplore  
• ACM Digital Library  
• SpringerLink

## Search Strategy

(("Generative AI" OR "Large Language Models" OR "GPT" OR "GenAI" OR "LLMs")   
AND ("Requirements Engineering" OR "software requirements" OR "requirements elicitation"   
OR "requirements refinement" OR "requirements validation"))

### Search Strategy Notes

The search focuses on the intersection of Generative AI technologies and RE. Broader terms like 'software engineering' were excluded to maintain relevance to the study. Variations in terminology (e.g., 'requirements specification') were included in the search string.

## Inclusion/Exclusion Criteria

|  |  |  |
| --- | --- | --- |
| Area | Inclusion | Exclusion |
| Databases | Indexed in Scopus, IEEE Xplore, ACM, SpringerLink, Web of Science | Not indexed in the selected databases |
| Document Types | Journal articles, conference papers | Editorials, blogs, or non-peer-reviewed works |
| Years | 2015–Present | Pre-2015 |
| Language | English | Non-English |
| Topic Focus | Focused on Generative AI and RE | General AI topics not specific to RE |

## Article Review Process Plan

### Abstract Review

• An initial subset of 50 articles will be reviewed independently by the authors to determine inclusion/exclusion.

• Interrater reliability will be calculated (target: 80%).

• Discrepancies will be discussed, and criteria will be refined based on agreements.

• Once agreement is reached, the remaining abstracts will be screened by individual reviewers.

### Full-Text Review

• Verification of inclusion criteria via a full-text scan.

• Articles meeting the criteria will proceed to data extraction.

## Data Extraction Plan

The following data will be extracted:

• Title, author(s), year, and publication venue

• RE subdomains addressed

• Generative AI tools or techniques used

• Evaluation metrics and methodologies

• Identified benefits and challenges

• Research gaps

## Subgroup Analysis

The subgroup analysis will address:

• Trends by RE subdomain (e.g., elicitation vs. validation)

• Generative AI methods/tools employed

• Venue distribution (journals vs. conferences)

• Geographical or institutional trends

## References

• Kitchenham, B., et al. (2009). Systematic literature reviews in software engineering – A systematic literature review. \*Information and Software Technology, 51\*(1), 7-15.

• Relevant foundational literature on Generative AI and Requirements Engineering.