

An Empirical Analysis of the Glob Ecosystem

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Abstract Glob patterns, a domain-specific language for structured string matching, are a foundational yet understudied component of modern software development embedded in everything from build scripts and configuration files to web server routes. However, this widespread use, with 79.1% of sampled GitHub project use globs in some form, rests on a fragile foundation. Despite their ubiquity across operating systems, programming languages, and tools, a lack of standardization has led to a fragmented ecosystem rife with inconsistent behaviors, security vulnerabilities, and usability pitfalls.

This paper presents the first empirical study of the glob ecosystem to quantify these challenges and chart a path toward robust solutions. Through an analysis of 1,966 open source projects, 1,355 Github issues, 444 CVE reports, and 361 Stack-Overflow posts, we systematically map the feature support and real-world usage of globs across six popular programming languages. Our findings reveal a stark divide between language designs and developer adoption. In addition, we document inconsistencies that hinder portability, reliability, and create security flaws. Our analysis reveals that security vulnerabilities are not corner cases, but a dominant concern, comprising almost a quarter of all developer discussions. We propose a path forward through standardization and introduce a formal grammar for *GlobSpec*, a unified specification designed to resolve semantic ambiguities and bridge the expressiveness gap between current implementations and developer requirements.

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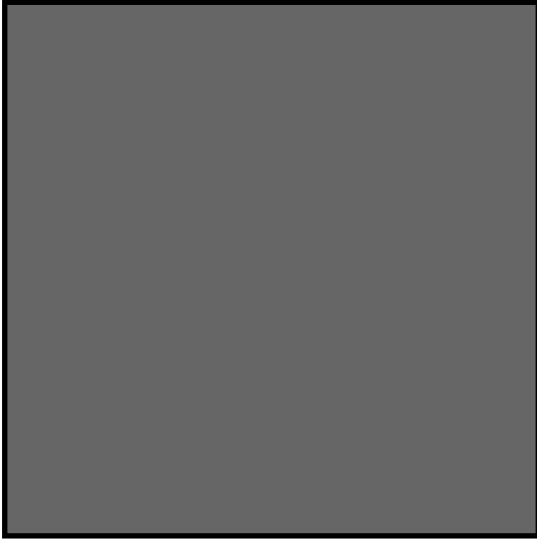


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1 Introduction

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2 Section title

Text with citations [TIOBE(2025)].

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Paragraph headings Use paragraph headings as needed.

$$a^2 + b^2 = c^2 \quad (1)$$

References

[TIOBE(2025)] TIOBE (2025) Tiobe index. <https://www.tiobe.com/tiobe-index/>

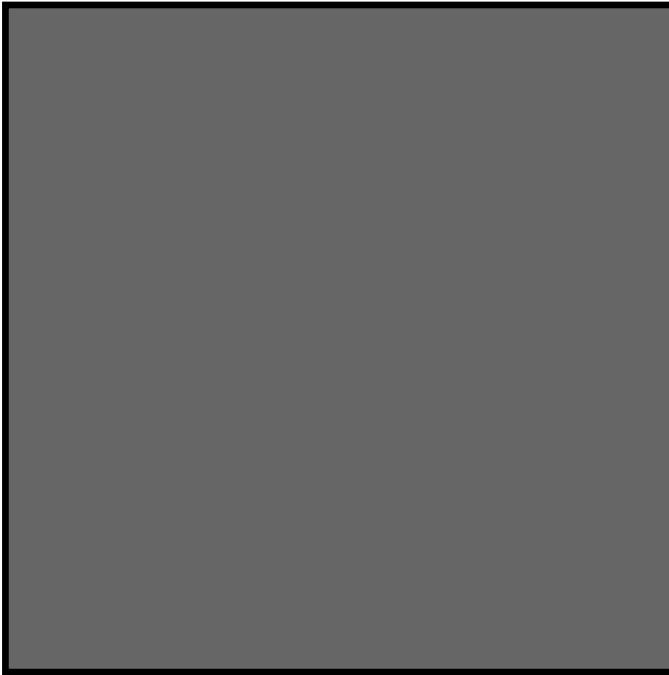


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