

The Role of AI in Software Release Management

About

This study examines how two types of AI, Analytical and Generative, can support decision-making in the software release process. Based on qualitative interviews with seven industry experts, the paper identifies the key benefits, hurdles, and practical applications of integrating AI into modern, fast-paced development environments.

Problem

In modern software development with rapid CI/CD cycles, release management has become increasingly complex, compressing decision windows and elevating risk. While Artificial Intelligence presents new tools to manage this complexity, significant practical challenges such as integration complexity, model opacity, and organizational resistance hinder its effective adoption.

Study Outcome

- AI integration offers key benefits including increased automation of repetitive tasks, more efficient resource allocation, enhanced risk forecasting, and improved overall decision-making.
- A clear division of labor was identified: Analytical AI is best for quantitative tasks like forecasting incidents and detecting anomalies, while Generative AI excels at language and coordination tasks such as summarizing changes and drafting release notes.
- The primary challenges to AI adoption are high integration complexity with existing systems, lack of transparency or trust in 'black-box' AI models, and human/organizational factors like skill gaps and resistance to change.
- For successful adoption, practitioners should prioritize reliable data pipelines, pair automated decisions with clear explanations, maintain human oversight for critical steps, and pilot AI solutions before scaling.

Keywords

Software Release Management • Analytical AI • Generative AI • CI/CD • DevOps • Automation • Decision-making