Enhancing RCA in CI/CD pipelines Failures using Gen-AI

Sub Theme: Leveraging [Gen] AI to solve problems within DevOps

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Problem Statement

CI/CD pipelines are vital for automating software development, but they often face below mentioned challenges:

- Frequent failures in CI/CD pipelines
- Complex and time consuming troubleshooting
- 64% of organizations experience critical failures monthly
- 75% of downtime results from troubleshooting and human errors

Limitations of Traditional RCA Methods for handling CI/CD Pipeline failure

- Inadequate in addressing the complexity of CI/CD issues
- Often fail to pinpoint root causes efficiently

- 26% of a developer's time is spent in reproducing and fixing failing tests – which equals 620 million developer hours a year. The total value of salary spent on those hours adds up to $61 billion annually and equates to $1.2 trillion in enterprise value lost for shareholders a year.
- Software engineers spend an average of 13 hours to find and fix a single failure in their backlog. **Source**

Statistics

Prevalence and impact of issues in CI/CD pipelines

64%

Org. experiencing Downtime

45%

Failure due to Complex interaction

75%

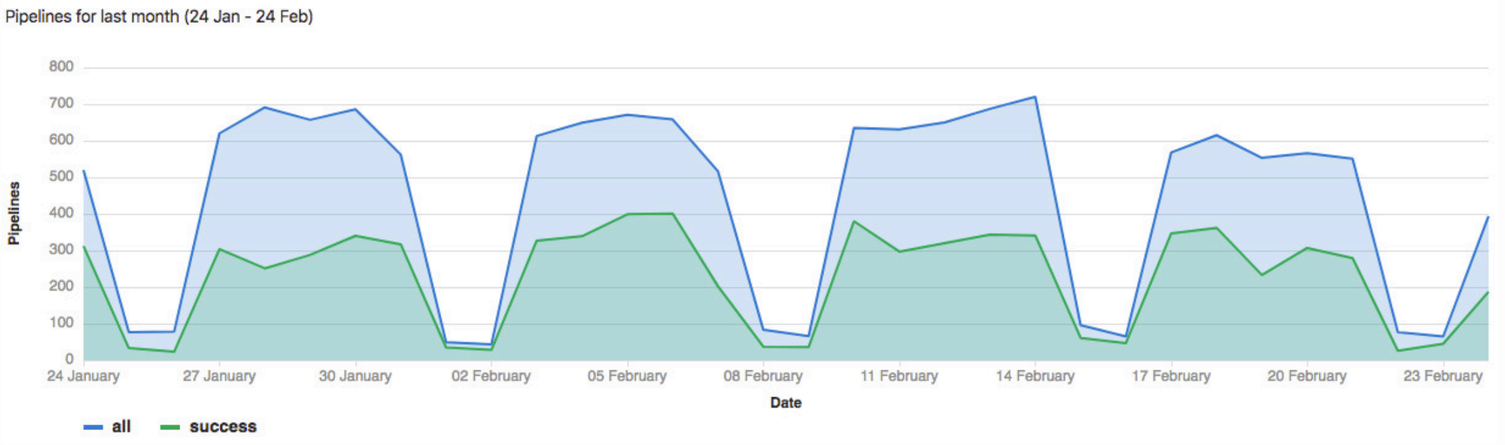
Failure due to Human Error

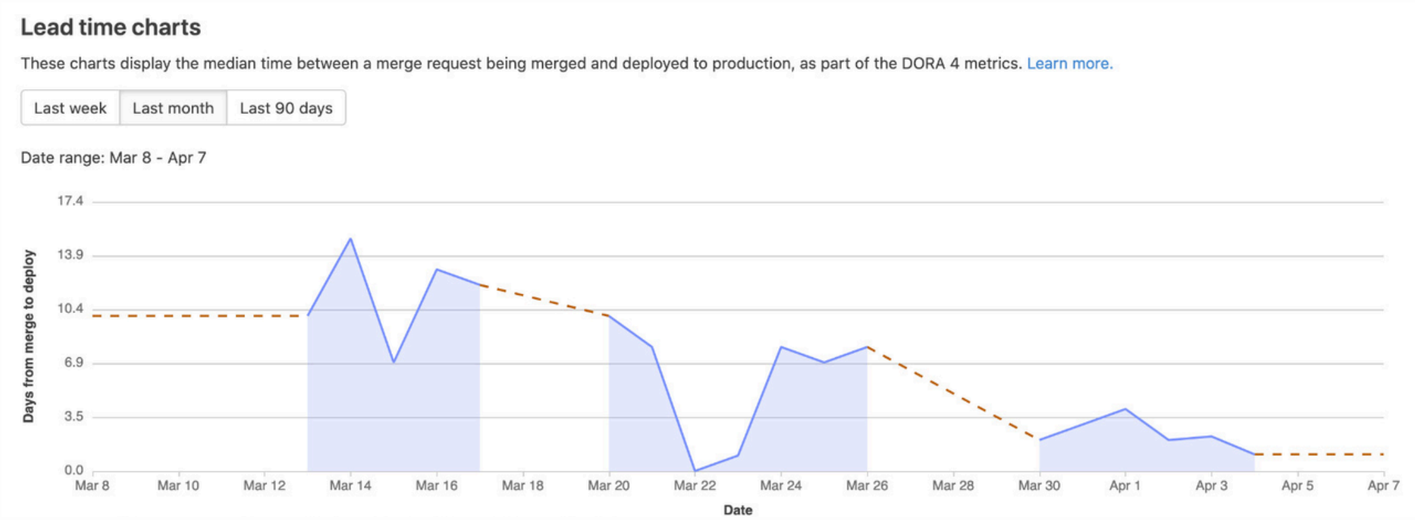
30%

Failure due to Misconfigurations

Source: StackOverflow 2024 Developer Survey

Source: GitLab DevSecOps 2024 Report





Source: GitLab CI CD Analytics

Proposed Solution

01 Automated Error Log Analysis using Gen-AI

02 Efficient Correction and Resolution Following Pipeline Failures

03 Automated RCA Reports and Severity Classification for CI/CD Pipeline

Innovation Aspects & Impacts

Social Impact

- Improved job satisfaction and reduced working hours
- Enhanced Productivity of a Employee

Business Impact

- Reduced downtime
- Increased efficiency
- Lower operational costs
- Improved profitability and competitive advantage

Innovation Aspects

- Utilizing GenAI to analyze error logs and suggest solutions
- Exploiting advanced data analysis to preemptively address deployment issues

Thank You

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