Future-Proofing SRE

Integrating AI for Resilience and Efficiency

How AI fits into SRE workflow

Alerting and Monitoring

Incident Response

Capacity Planning

Automation and Tooling

Intelligent Filtering and Prioritization

Analysis and Summarisation

Forecasting and Predictive Analysis

Reducing Toil

Anomaly Detection

Intelligent Filtering and Prioritization

- Using supervised learning on past data to learn patterns and categorising false alerts and assess severity
- Dynamic thresholds for alerts based on forecasting models
- Auto-detection of issues
- Tools like Grafana Dynamic alerting and metric forecasts can be used for this

Anomaly Detection

- Establish baseline by detect the numerical outliers with statistics
- Using Principal Component Analysis and algorithms like Density-based spatial clustering of applications with noise (DBSCAN) clustering to identify anomalies and group behaviors
- Tools like Splunk Machine Learning Toolkit , Grafana Machine Learning Outlier Detection, Davis AI, Datadog Bits AI can be used for this
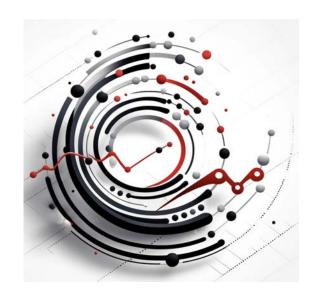
Analysis and Summarisation

- Generative AI can be used for effective summarization of incident efficiently
- Automate root cause analysis, allowing for faster identification and resolution of issues like Amazon DevOps Guru
- Tools like Grafana Incident auto-summary can be used

Forecasting and Predictive Analysis

- Predict future demands and adjust their infrastructure accordingly.
- Machine Learning Assisted System Performance and Capacity Planning) process integrates machine learning with load testing to optimize system capacity planning
- Splunk ML toolkit, Dynatrace and Datadog provides various features for ML based predictive analysis

Reducing Toil

- Using generative AI based tools as assistant for IaC e.g. Pulumi has an AI assistant
- Tools like Mabl or Testim use machine learning to create, execute and maintain tests, reducing the need for human intervention
- Tools like Sonar and CodeClimate can help manage and reduce technical debt.

Challenges

- Lack of Skilled Personnel
- Data Quality Issues
- Resistance to Change
- Integration with Existing Systems
- High Costs
- Compliance and Security Concerns

Thank You