INCIDENT POSTMORTEM ANALYSIS

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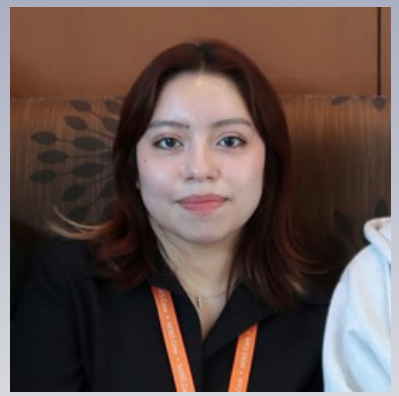
GEAN INTRODUCTIONS



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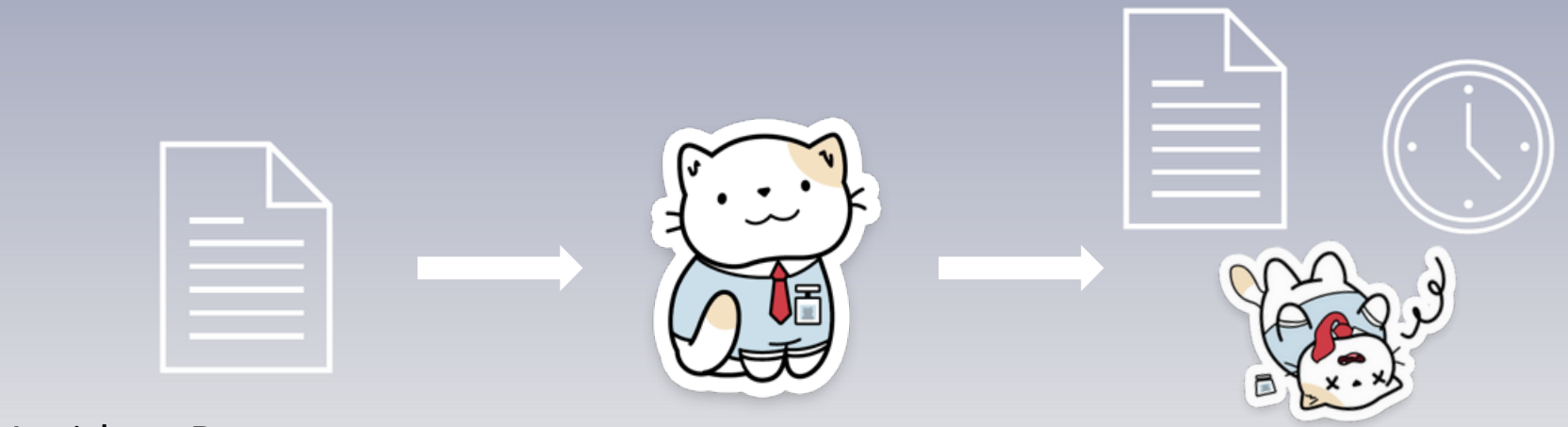
OVERVIEW

The Foundation Reliability and Resilience team's mission is to strengthen the resilience of E+D services to system and service faults, R&R works on strengthening faults within numerous services within E+D

Our project, Incident Postmortem Analysis, explores the automation of summarization and pattern recognition capabilities of Large Language Models (LLM) to analyze postmortem incidents and make the tedious process easier

PROBLEM AND SOLUTION

Problem: Manual PIR Process | Solution: Automated PIR Process



Incident Postmortems

SREs

Incident Postmortems done manually by SREs

Why a tedious process?

SRE: Site Reliability Engineer | PIR: Post Incident Review

CURRENT MANUAL PIR PROCESS

ICM flags incident for review

On Call Engineers discuss incidents marked for postmortem during WSR

SREs take notes on completed postmortems during WSR

SREs manually identify patterns using postmortem info & pre-existing PD

Manually identified info is entered and stored in excel sheet

Data is imported to Power BI to derive and share insights

WSR: Weekly Service Review | ICM: Incident Manager | PD: Pattern Dictionary

AUTOMATED PIR PROCESS

On Call Engineers discuss incidents during WSR

Run program that utilizes GPT 3.5 & DistilBERT to predict patterns + summary from postmortem info

Save findings in Power BI then report & derive insights from patterns using Power BI

WSR: Weekly Service Review

OVERALL PERFORMANCE

LLM PRECISION

How consistently LLM predicted patterns

Month (2022-2023)	Amount of PIRS	Precision
December	16	80%
January	13	92%
February	18	94%
May	25	95%

BERT ACCURACY

How well BERT matched predicted patterns

Month (2022-2023)	Amount of PIRs	Accuracy
December	16	73%
J an u ary	13	78%
February	18	70%
May	25	70%

$$Precision = \frac{TruePositive}{TruePositive + FalsePositive}$$

$$Accuracy = \frac{TrueNegatives + TruePositive}{TruePositive + TrueNegative + FalseNegative}$$

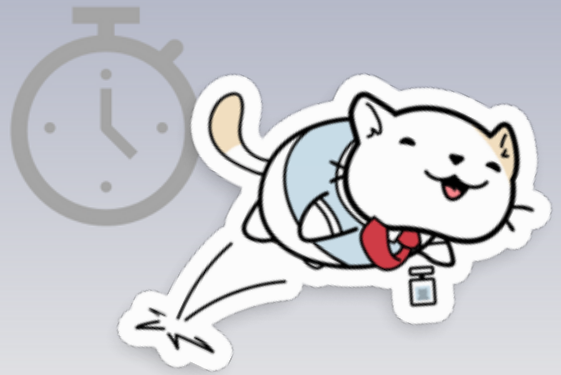
LLM: Large Language Model | BERT: Bidirectional Encoder Representations from Transformers | PIR: Post-Incident Report

LLM PIR COMPARISON EXAMPLE

Manually Derived Pattern	• Resilience
LLM Predicted Pattern	•'Need for better resilience strategies'
BERT Predicted Pattern	• {'Resilience': 'Need for better resilient systems, services, or strategies'}]

LLM: Large Language Model | BERT: Bidirectional Encoder Representations from Transformers

BUSINESS IMPACT



Allowing SREs to streamline the postmortem process by reducing manual hours spent analyzing incidents

Serving as an “AI Copilot”: SREs can focus on solutions to reduce the impact of recurring incidents

Reducing time to mitigation, time to detection and impact of incidents that occur across the Substrate organization

SRE: Site Reliability Engineers

THANK YOU!

How many cats were in this presentation?