



# SMART CLAIMS ASSISTANT

GENAI-POWERED ASSISTANT FOR INSURANCE CLAIM ANALYSIS AND RISK DETECTION

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# WHAT IS THE **SMART CLAIMS ASSISTANT**



- Analyze raw insurance claims and convert them into structured, bullet-point summaries
- Classify each claim as Low, Medium, or High Risk based on rule-based logic
- Assist insurance teams in prioritizing high-risk claims while reducing manual review time

## HOW WE DID IT?

GenAI Reasoning + Rule-Based Classification

## TOOLS AND TECH USED

### 01 Python

Data Processing and Rule-engine

### 02 OpenAI GPT-4

Claim Summarization

### 03 JSON/Pandas

Data Storage and Manipulation

### 04 Figma

Demo UI



# WHY THIS MATTERS

## THE PROBLEM WITH MANUAL CLAIM REVIEWS

Manual Review is Slow, Inconsistent & Costly. Traditional insurance claim processing is:

1. Time-consuming: 1000s of claims must be manually read
2. Inconsistent: different analysts = different judgments
3. Resource-intensive: senior adjusters waste time on low-risk claims

### THE NEED

An automated AI-powered solution built to summarize and flag claims before human review.

## CHALLENGES FACED BY INSURANCE TEAMS:

- Prioritizing fraudulent claims disguised as urgent requests
- Delays in identifying claims that require immediate attention
- Lack of summarization slows down initial assessment



# OUR SOLUTION

## A TWO-PRONGED APPROACH

### CLAIM SUMMARIZATION

We used OpenAI GPT-4 to convert complex claim descriptions into 2-3 clear bullet points. This provides quick context to analysts, even before risk evaluation.

### RISK CLASSIFICATION ENGINE

A transparent, rule-driven system classifies each claim based on:

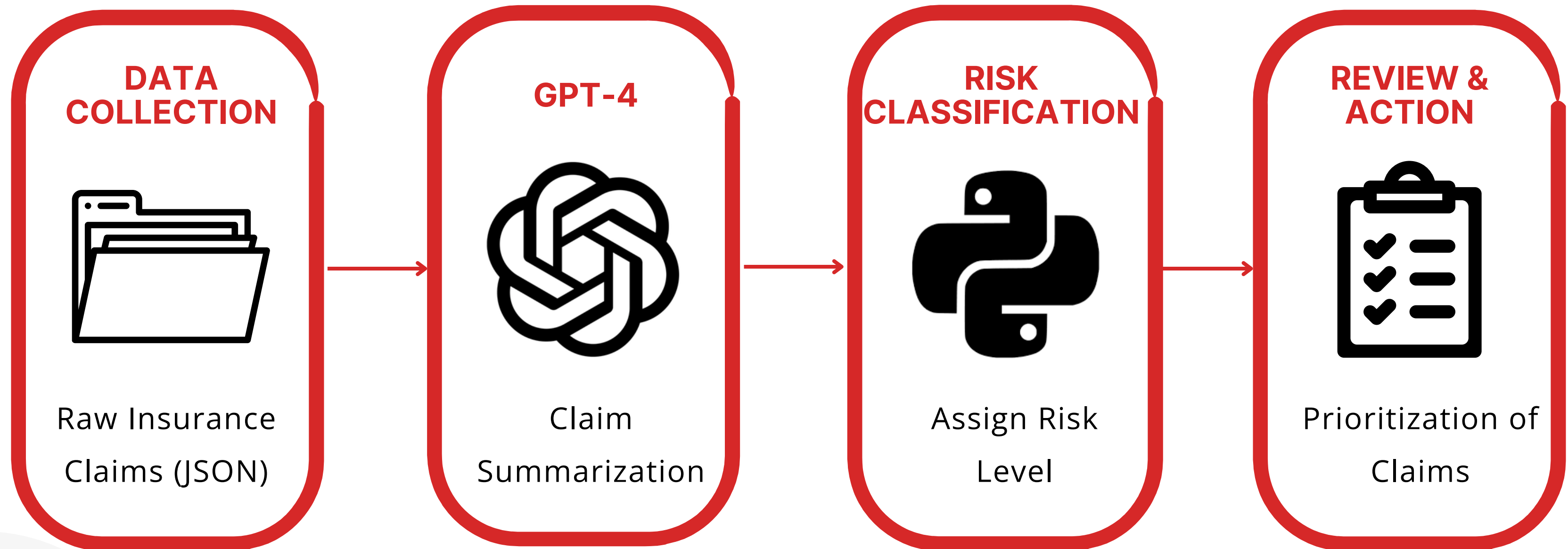
- Claim Type
- Amount
- Urgency
- Number of Prior Claims

# HOW IT WORKS

## END-TO-END ARCHITECTURE



## SMART CLAIMS



Result: Analysts or downstream systems use these insights to prioritize high-risk claims and streamline claim reviews.



# PROJECT PHASES

Phased Development Approach

## Phase - 1 Data Collection and Formatting

Collected raw insurance claim records in JSON format

Structured each entry with fields: type, amount, urgency, description, and prior claims

Formatted readable prompts and ensured input consistency

## Phase - 2 GPT-based Claim Summarization

Used OpenAI's GPT-4 to convert raw descriptions into bullet-point summaries

Used refined prompt engineering for claim summarization

## Phase - 3 Rule-based Risk Classification Logic

Implemented rule based logic using Python for different claim thresholds

Risk tagging considers urgency, prior claim history, and claim amount

Each claim is tagged as Low, Medium, or High Risk

# RISK CLASSIFICATION RULES

RISK LEVEL	CONDITIONS
HIGH	<p>Prior claims <math>\geq 5</math></p> <p>Prior claims <math>\geq 4</math> and urgency = "Yes"</p> <p>Amount exceeds upper threshold for the claim type</p> <p>Urgency = "Yes" and prior claims <math>\geq 3</math> and amount is in upper third of range</p>
MEDIUM	<p>Prior claims = 2 or 3</p> <p>Urgency = "Yes" and amount is in mid-range for claim type</p> <p>Prior claims <math>\geq 4</math> but urgency = "No"</p> <p>Urgency = "No", but amount is near the upper limit</p>
LOW	<p>Prior claims <math>\leq 1</math></p> <p>Amount below low threshold for claim type</p> <p>No urgency and no pattern of large claims</p>

# CLAIM THRESHOLDS

## BY DIFFERENT CLAIM TYPES

RISK LEVEL	LOW THRESHOLD	HIGH THRESHOLD
HEALTH INSURANCE	50,000	250,000
AUTO INSURANCE	35,000	75,000
RENTERS INSURANCE	10,000	25,000
BURGLARY & THEFT	10,000	25,000
PROPERTY DAMAGE	75,000	250,000

## REAL-WORLD RISK-LEVEL EXAMPLES

01

### Low Risk

Type: Property Damage

Amount: \$9,000 | Urgency: No | Prior Claims: 1

Result:  $\text{Prior\_claims} \leq 1$  and  $\text{amount} \leq \$75,000$  = low risk

02

### Medium Risk

Type: Burglary & Theft

Amount: \$13,000 | Urgency: Yes | Prior Claims: 2

Result:  $\text{Prior claims} = 2$  and amount in medium range = medium risk.

03

### High Risk

Type: Auto Insurance

Amount: \$87,000 | Urgency: Yes | Prior Claims: 5

Result:  $\text{Amount} > \$75,000$  for Auto Insurance and  $\text{Prior Claims} > 5$  = high risk.



# SAMPLE CLAIMS + GEN-AI RESULTS

## Sample Claim:

--- Claim ID: lutw4250 ---

Type: Burglary & Theft

Description: Claim related to Large theft, amounting to 10827.15 USD.

Amount: 10827.15

Urgency: No

Prior Claims: 2

## AI Output:

Claim ID: lutw4250

Summary:

Burglary & Theft claim for large theft

Amount: \$10,827.15

Urgency: No; Prior Claims: 2

Risk Level: Medium

Reason: Amount is within medium range (\$10,000–\$25,000) and there are 2 prior claims.

## Sample Claim:

--- Claim ID: mrwh8826 ---

Type: Health Insurance

Description: Claim related to High-Risk/Long-Term Claims, amounting to 832016.22 USD.

Amount: 832016.22

Urgency: Yes

Prior Claims: 4

## AI Output:

Claim ID: mrwh8826

Summary:

Health Insurance for long-term care

Amount: \$832,016.22

Urgency: Yes; Prior Claims: 4

Risk Level: High

Reason: Amount > \$250,000 and prior\_claims ≥ 4 AND urgency = Yes — satisfies multiple high-risk rules



## SMART CLAIMS

### ENTER CLAIM DETAILS

Claim Type:	<input type="text" value="e.g. Health Insurance"/>
Amount:	<input type="text" value="e.g. 65000"/>
Claim Description:	<input type="text" value="Provide claim details"/>
Urgency:	<input type="text" value="Yes/No"/>
Prior Claims:	<input type="text" value="e.g. 2"/>

**SUBMIT**

# UI CONCEPT & USER JOURNEY

User submits Claim Data



System Processes Claim



Output is Displayed



## SMART CLAIMS

### CLAIM RESULTS

Claim Summary:

Auto Insurance claim for bodily injury  
Amount: \$87,224.78  
Urgency: Yes; Prior Claims: 5

Risk Level:

High



Reason for Risk:

Prior\_claims  $\geq$  5 and amount  $>$  \$75,000 — meets multiple high-risk rules.

**SUBMIT**

INPUT SCREEN - USER INPUT

OUTPUT SCREEN - AI OUTPUT

# BUSINESS IMPACT

## EMPOWERING INSURANCE TEAMS WITH AI



## SMART CLAIMS

The Smart Claims Assistant directly addresses inefficiencies, delays, and inconsistencies in insurance claim handling. It creates measurable value across operational, analytical, and strategic levels.

### Strategic Brand Development

**Faster Claim Reviews:** If an analyst takes 6–8 minutes to read and interpret a claim manually, structured summaries reduce that to 3–4 minutes, saving 2–4 minutes per claim.

**Smarter Prioritization:** Helps analysts immediately focus on high-risk, high-impact claims

**Repeatable Workflow:** Rule-based logic ensures consistency across claim evaluations, avoiding human error by 35%.

### Data-Driven Marketing

**Augmented Human Decision-Making:** Gives analysts a clearer starting point for investigation

**Transparent Criteria:** Enables auditability through rules, unlike ML models that deliver a risk score without proper explanation.

**Risk Pattern Detection:** Risk-tagged outputs can feed into fraud analytics or claim pattern dashboards

### Creative Content Production

**Cost Savings:** Reduces time and headcount spent on manual reviews, with up to 50% fewer analyst hours required

**Scalable Across Regions/Teams:** Can be adapted to different insurance products and jurisdictions

### 01 **OpenAI API Integration**

Automate GPT-4 based summarization using the OpenAI API, where users input raw claims and receive instant summary without manual intervention.

### 02 **Analytics Dashboard**

Visualize claim trends, risk distribution, fraud likelihood, and enable filters by region or risk level, giving managers insight into claim volume and risk exposure.

### 03 **Alerting & Workflow Integration**

Integrate email/SMS alerts for high-risk claims and suspicious patterns, pushing outputs to claim management systems or internal CRMs.

### 04 **Plug-In Architecture**

Build REST APIs to allow integration with other tools (e.g., Salesforce, ServiceNow) and convert into a microservice for enterprise-scale deployment.

## WHAT DID WE LEARN?

Building GenAI-assisted systems requires balancing intelligent automation with clear, human-understandable decisions.

Rule-based logic can deliver transparent, business-ready decisions without needing large datasets

GPT-powered summarization and risk-tagging can demonstrate real-world GenAI value

Clean data formatting and thoughtful prompt engineering are critical to meaningful AI output

## FINAL TAKEAWAYS

Transforms complex claims into clear summaries, enabling quicker judgment calls and reducing manual reliance.

Risk classification ensures smarter resource allocation and faster response

Rule-based logic supports regulatory compliance, audit readiness, and confident decision-making across teams.

The project sets a strong foundation for scaling into fully automated AI-driven Insurance Operations.



# THANK YOU

● FOR EXPLORING SMART CLAIMS WITH US!

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