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:

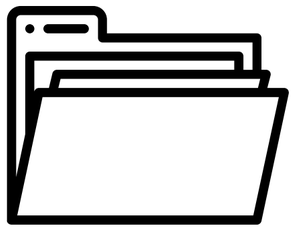
- Claim Type
- Amount
- Urgency
- Number of Prior Claims

HOW IT WORKS

END-TO-END ARCHITECTURE

SMART CLAIMS

DATA COLLECTION

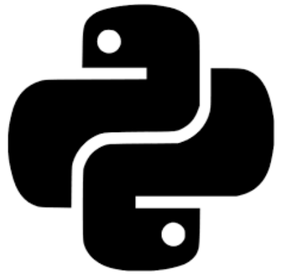


Raw Insurance Claims (JSON)

GPT-4

Claim Summarization

RISK CLASSIFICATION



Assign Risk Level

REVIEW & ACTION

Prioritization of 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	Prior claims ≥ 5 Prior claims ≥ 4 and urgency = "Yes" Amount exceeds upper threshold for the claim type Urgency = "Yes" and prior claims ≥ 3 and amount is in upper third of range
MEDIUM	Prior claims = 2 or 3 Urgency = "Yes" and amount is in mid-range for claim type Prior claims ≥ 4 but urgency = “No” Urgency = “No”, but amount is near the upper limit
LOW	Prior claims ≤ 1 Amount below low threshold for claim type No urgency and no pattern of large claims

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: Prior_claims ≤ 1 and amount ≤ $75,000 = low risk

02 **Medium Risk**

Type: Burglary & Theft
Amount: $13,000 | Urgency: Yes | Prior Claims: 2
Result: 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: Amount > $75,000 for Auto Insurance and 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

UI CONCEPT & USER JOURNEY

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 ≥ 5 and amount > $75,000 — meets multiple high-risk rules.

SUBMIT

INPUT SCREEN - USER INPUT

User submits Claim Data

↓

System Processes Claim

↓

Output is Displayed

SMART CLAIMS

ENTER CLAIM DETAILS

Claim Type: e.g. Health Insurance

Amount: e.g. 65000

Claim Description: Provide claim details

Urgency: Yes/No

Prior Claims: e.g. 2

SUBMIT

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

SCALING UP...

FROM PROTOTYPE TO PRODUCT

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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