



GenAI Claims: AI-Powered Insurance Claim Automation

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GenAI Claims – AI-powered Insurance Claims System

Domain: Generative AI in Insurance. It applies AI to automate claim processing, fraud detection, and customer communication.

Sub-Area: Digital transformation of insurance claim workflows. It uses AI models, rule-based fallback systems, and notification platforms.

Focus: Automating claim intake and data extraction. Adding fraud detection, duplicate claim alerts, and real-time notifications.

Goal: Reduce settlement delays and human errors. Improve transparency, customer trust, and scalability for future insurer needs.



Problem Statement:

- **Manual and Slow Process:**
Traditional claim handling is time-consuming and relies heavily on paperwork. This causes unnecessary delays and frustrates customers.
- **High Error and Fraud Risk:**
Human errors and incomplete records are common in manual claims. Fraudulent or duplicate claims often pass through unnoticed.
- **Customer Dissatisfaction:**
Customers face long waiting times without clear updates. This reduces trust in the insurance process and creates negative experiences.
- **No Real-Time Communication:**
Existing systems do not provide instant claim status. Customers remain uncertain about progress and final settlement timelines.



Hardware & Software Requirements:

- **Hardware – Basic Devices:**

A laptop or personal computer with stable internet is required. These devices allow users and agents to access the claim system smoothly.

- **Hardware – Cloud Infrastructure:**

A cloud server is needed to host APIs, databases, and AI models. This ensures scalability and reliable performance during high claim loads.

- **Software – Backend & Frontend:**

FastAPI (Python) with SQLite powers the backend, while HTML, CSS, and JavaScript build the claim submission frontend. Together they provide a strong foundation for operations.

- **Software – AI & Notifications:**

OpenAI API is used for AI-driven data extraction with a rule-based fallback for reliability. Twilio and SMTP handle SMS, WhatsApp, and Email notifications to customers.



Empathy:

- **Customers:**
Customers want quick claim settlements without unnecessary delays. They also expect regular updates to stay informed about the claim status.
- **Insurance Agents:**
Agents need structured data to review claims efficiently. They also require fraud detection tools to identify suspicious activities early.
- **Caregivers and Family:**
Caregivers want timely notifications about claim progress for their dependents. This helps them provide better support and peace of mind to the insured person.
- **AI Empathy Features:**
The system sends instant claim acknowledgment and reminders through SMS, Email, and WhatsApp. It also delivers fraud alerts and continuous updates to improve transparency.



Abstract:

- **Automation of Claim Process:**

GenAI Claims streamlines claim submission, data extraction, and fraud detection. This reduces manual work and improves overall efficiency.

- **AI and Rule-Based Reliability:**

The system uses AI for accurate claim extraction, while a rule-based fallback ensures operations continue even without AI support. This makes the platform reliable and adaptable.

- **Real-Time Communication:**

Customers receive instant notifications via SMS, Email, and WhatsApp. This improves transparency, builds trust, and enhances the user experience.



Module Identification:

- **Claim Submission Module:**
Users enter claim details through a simple web interface. This reduces paperwork and makes the process user-friendly.
- **Data Extraction Module:**
AI or rule-based logic extracts structured claim information. This ensures accuracy and minimizes manual entry errors.
- **Database & Fraud Detection Module:**
Structured claim records are stored securely in SQLite. Fraud detection runs in the background to flag duplicates or suspicious claims.
- **Notification & Dashboard Module:**
Customers receive instant updates via SMS, Email, or WhatsApp. Agents track and manage claims through an easy-to-use dashboard.



Algorithms:

- **Data Extraction Algorithm:**

Large Language Models (LLMs) are used to extract claim details automatically. A Regex-based fallback ensures accuracy when AI is unavailable.

- **Fraud Detection Algorithm:**

Rule-based checks identify duplicate or invalid claims. This prevents fraudulent activities and reduces financial risks.

- **Notification Scheduling Algorithm:**

Event-driven triggers are used to send claim status updates. Each step in the workflow generates instant alerts to customers.

- **Claim Prioritization Algorithm:**

A scoring model ranks claims based on urgency and risk. This allows critical cases to be handled before regular claims.



Literature Survey:

- **AI for Claims Automation – IEEE Access, 2023:**
This paper highlights how AI can speed up claim processing. It shows the benefits of automation in reducing delays and errors.
- **Fraud Detection in Insurance – IEEE TNN, 2022:**
The study explores machine learning models for fraud prevention. It emphasizes early detection as a key factor in saving costs.
- **Generative AI for Document Extraction – Nature, 2021:**
This work explains how AI can extract structured data from documents. It provides techniques that are useful for insurance claim intake.
- **Multi-channel Notifications – IEEE IoT Journal, 2020:**
The research shows the importance of real-time alerts in fintech systems. It proves that instant updates improve transparency and customer trust.



Budget:

- **Frontend & Backend Development – ₹4,000:**
This cost covers building the web interface and backend services. It includes claim submission forms and API integration.
- **Database & Cloud Hosting – ₹2,000:**
Funds are used to set up secure databases and deploy cloud servers. This ensures scalability and reliable system access.
- **AI Model & API Usage – ₹3,000:**
Budget is allocated for AI-based claim extraction and analysis. Rule-based fallback ensures smooth operation even if API use is limited.
- **Testing & Design – ₹1,000:**
This includes UI/UX improvements and software testing. It ensures a user-friendly design and system reliability.
- **Total Estimated MVP Cost: ≈ ₹10,000**



Conclusion:

- **Smart and Automated System:**
GenAI Claims reduces manual work through automation. This improves efficiency and minimizes errors in claim processing.
- **Faster Settlements:**
Claims are processed quickly with AI and rule-based systems. Customers experience shorter waiting times and higher satisfaction.
- **Fraud Prevention and Transparency:**
Fraud detection modules flag suspicious claims early. Real-time updates keep customers informed and build trust.
- **Scalable and Future-Ready:**
The system can integrate with insurer APIs and advanced AI models. This makes it adaptable for future industry needs.



THANK YOU