



# InsurAI - Insurance Policy Automation with Intelligence System

A comprehensive web application for managing insurance policies, claims, and agent interactions with AI-powered features

**Presented by:** Shivam Gupta

**Email:** shivamgupta22bg@gmail.com

## Project Overview



**Streamline Policy Management**



**Automate Claims Processing**



**Enhance Agent Productivity**



**Improve Customer Satisfaction**

## Target Users

- Insurance Agents
- Policyholders
- Insurance Companies

# Technology Stack & System Architecture

## Backend:

- **Framework:** Spring Boot 3.5.5
- **Language:** Java 21
- **Database:** PostgreSQL
- **Authentication:** JWT (JSON Web Tokens)
- **Real-time Communication:** WebSocket
- **AI Integration:** Google AI Platform (Gemini API), OpenNLP
- **Build Tool:** Maven

## Frontend:

- **Framework:** React 19
- **Build Tool:** Vite
- **Styling:** TailwindCSS
- **Routing:** React Router DOM
- **State Management:** React Context API
- **External Services:** Supabase (for authentication and data storage)

**Additional Tools:** Lombok, Spring Security, Hibernate

## System Architecture

**Architecture Pattern:** MVC (Model-View-Controller)

### Backend Structure:

- **Controllers:** Handle HTTP requests (AuthController, PolicyController, ClaimController, etc.)
- **Services:** Business logic (AuthService, PolicyService, ClaimService, etc.)
- **Repositories:** Data access layer (UserRepository, PolicyRepository, etc.)
- **Models:** Entity classes (User, Policy, Claim, AgentAvailability, Notification)
- **Security:** JWT authentication, Spring Security configuration
- **Configuration:** WebSocket config, application properties

### Frontend Structure:

- **Components:** Reusable UI components
- **Pages:** Route-based pages (Authentication, Dashboards, User/Agent/Admin components)
- **Contexts:** Global state management (AuthContext, NotificationContext)
- **Assets:** Static files and styling

# Database Schema & Core Features

## Main Entities:

<b>User</b> Stores user information (id, email, password, name, phone, category - USER/AGENT/ADMIN)	<b>Policy</b> Policy details (id, user_id, agent_id, name, type, status, premium, coverage, dates)	<b>Claim</b> Claim information (id, policy_id, user_id, description, status, amount, dates, documents)
<b>AgentAvailability</b> Agent scheduling (id, agent_id, date, start_time, end_time, breaks)	<b>Notification</b> Real-time notifications (id, user_id, message, timestamp, read status)	

**Relationships:** Users can have multiple policies and claims; Agents manage policies and have availability schedules; Notifications link to users

## Core Features

01

### Authentication & Authorization

User registration and login with role-based access (USER, AGENT, ADMIN), JWT-based secure authentication, Protected routes based on user roles

03

### Claims Processing

File new claims with documents, Track claim status and history, Agent review and approval workflow

02

### Policy Management

View available policies, Purchase and manage personal policies, Agent-driven policy sales

04

### Agent Availability

Agents set and manage availability schedules, Users view online agents and book appointments, Real-time availability updates

# Advanced Features & User Roles

## Advanced Features



### Real-time Notifications

WebSocket-based instant messaging, Policy updates, claim status changes, appointment reminders, Notification history and management



### AI-Powered Voice Queries

Integration with Google Gemini API, Natural language processing for policy inquiries, Voice-based chatbot for customer support



### Chatbot Interface

Interactive AI assistant for common queries, Policy recommendations and guidance



### Admin Dashboard

User management (approve agents, manage users), Policy workflow oversight, System analytics and reporting

## User Roles and Dashboards

### USER Dashboard

- View personal policies and claims
- Browse available policies
- Check online agents and book appointments
- Access chatbot and voice query features

### AGENT Dashboard

- Manage policy sales and client interactions
- Set availability and handle client requests
- Process and review claims
- View performance metrics

### ADMIN Dashboard

- Oversee all users and agents
- Manage policy templates and workflows
- System-wide analytics and reporting
- User role management

# API Endpoints & Frontend Components

## API Endpoints (Sample)


- **Authentication:** /api/auth/login, /api/auth/signup, /api/auth/refresh
- **Users:** /api/users (CRUD operations)
- **Policies:** /api/policies (GET, POST, PUT, DELETE)
- **Claims:** /api/claims (file claim, update status, get history)
- **Agent Availability:** /api/agent-availability (set schedule, get available agents)
- **Notifications:** /api/notifications (WebSocket endpoint for real-time updates)
- **Voice Queries:** /api/voice-query (process natural language queries)


## Frontend Components Structure


- **Authentication Pages:** Login, Signup forms
- **Dashboard Pages:** Role-specific main dashboards
- **User Components:** MyPolicies, MyClaims, AvailablePolicies, OnlineAgents
- **Agent Components:** PolicySales, ClientRequests, AvailabilityManagement
- **Admin Components:** UserManagement, PolicyWorkflow, AgentManagement
- **Shared Components:** NotificationList, AgentAvailability, ClientRequests
- **Contexts:** AuthContext (user state), NotificationContext (real-time updates)


# Security & AI Integration


## Security Implementation


**JWT Authentication**  
Stateless token-based auth with refresh tokens

**Spring Security**  
Configured with custom JWT filter


**Role-based Access Control**  
Different permissions for USER, AGENT, ADMIN


**CORS Configuration**  
Allowed origins for frontend-backend communication


**Password Security**  
Encrypted storage using Spring Security crypto


**API Security**  
Protected endpoints with authentication requirements


## AI Integration

**Google Gemini API**  
Used for processing voice queries and natural language understanding

**OpenNLP**  
Natural language processing for text analysis

**Voice Query Service**  
Backend service to handle voice-to-text conversion and AI responses

**Chatbot**  
Frontend component integrated with AI for interactive assistance

**Intelligent Features**  
Policy recommendations, automated responses, query understanding

# Real-time Features, Development & Future Enhancements

## Real-time Features

- **WebSocket Configuration:** Spring WebSocket for bidirectional communication
- **Notification Handler:** Custom WebSocket handler for real-time notifications
- **Frontend Integration:** React context for managing WebSocket connections
- **Event-driven Updates:** Automatic UI updates for new notifications, status changes
- **Scalability:** Designed for multiple concurrent users with real-time interactions

## Challenges and Solutions:

- **Multi-role Authentication:** Implemented JWT with role claims for secure access control
- **Real-time Communication:** WebSocket integration for instant notifications
- **AI Integration:** API key management and error handling for external AI services
- **Complex Scheduling:** Agent availability system with break management
- **Document Handling:** File upload and storage for claim documents
- **Responsive Design:** TailwindCSS for consistent UI across devices

## Future Enhancements



**Mobile App:** Dedicated applications for iOS and Android platforms to enhance accessibility and user experience.



**Advanced Analytics:** Deeper insights into user behavior and operational efficiency for data-driven decision-making.



**Blockchain Integration:** Secure and transparent record-keeping for policies and claims using distributed ledger technology.



**Multi-language Support:** Expand global reach by offering the platform in various languages.



**Integration APIs:** Provide robust APIs for seamless integration with third-party systems and services.



**Advanced AI Features:** Implement predictive analytics, sentiment analysis, and hyper-personalized recommendations.

# Revolutionize Your Insurance Experience

Insur-AI offers AI-powered corporate policy automation, real-time agent availability, and seamless claims processing.

Get Started

Sign Up

## Key Features



### AI-Driven Policy Management

Automate and optimize your policy workflows with intelligent AI solutions.



### Real-Time Agent Availability

Connect instantly with available agents to get your queries resolved.



### Automated Claims Processing

Speed up claims with automated verification and processing.



### Secure User Dashboard

Manage your policies and claims securely from your personalized dashboard.

## Why Choose Insur-AI?

### Efficiency

Reduce manual processes by up to 70% with our AI-powered automation tools.

### Reliability

Ensure 99.9% uptime and secure data handling for peace of mind.

### Innovation

Stay ahead with cutting-edge AI technology tailored for insurance needs.

## Ready to Transform Your Insurance Operations?

Join thousands of businesses already using Insur-AI to streamline their processes.

Learn More



## Sign up

Already have an account? [Sign in here.](#)

### Category

User ▾

First Name

Last Name

+91 (IN) ▾

Phone Number

### Email

Email

### Password

Password

Show

Confirm Password

☐ I agree to the Terms and Conditions \*

☐ I agree to the Privacy Policy \*

Sign up

Insur  
AI

Insur-AI

## Log in

New to Insur-AI? [Sign up for an account.](#)

Category

Agent



Email

Email

Password

Password

Show

[Forgot Password?](#)

☐ Remember me

Sign in

Insur  
AI

Insur-AI

<div> <div></div> <div>policies</div> <div></div> </div>
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
# User Dashboard

Manage your insurance policies and claims

My Policies

6


Active policies



My Claims

1


Total claims filed



Available Policies

5


Browse and purchase



Online Agents

5

Available for booking



Available Policies	
Vehicle Premium: ₹1,234.00/month Coverage: ₹3,00,000.00	Buy
Health Premium: ₹500.00/month Coverage: ₹50,000.00	Buy
Business Premium: ₹1,100.00/month Coverage: ₹1,00,000.00	Buy
Business	





Online Agents

Shivam Gupta  
2025-09-19 - 00:20 to 02:20

Book

Shivam Gupta  
2025-09-25 - 16:07 to 18:07

Book

Shivam Gupta  
2025-09-10 - 01:42 to 03:42

Book

Shivam Gupta  
2025-09-18 - 23:44 to 02:00

Book

Shivam Gupta

Book



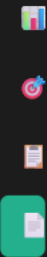
My Policies

Vehicle – Active  
Premium: ₹1,234.00

Business – Under Review  
Premium: ₹50.00

Business – Active  
Premium: ₹50.00

Business – Active  
Premium: ₹99.00



My Claims

Cancel

You have purchased a policy. If you wish to raise a claim for this policy, please provide the following details. Once submitted, your claim request will be sent to the assigned Agent and Admin for review and approval.

Policy ID / Number \*

Select a policy

▼

Claim Type \*

Select claim type

▼

Claim Amount Requested (INR) \*

Date of Incident \*

mm/dd/yyyy

📅

Description of Incident \*

Brief explanation of what happened

Supporting Documents (Optional)

For now, file upload is not implemented. You can describe or provide URLs.

Enter file names or URLs separated by commas

Submit Claim

claiming 10k for testing – Pending (Other)

Amount: ₹10,000.00

Incident Date: 9/25/2025



Client Requests

Handle pending requests for policy purchases or claims.

Client Requests Management

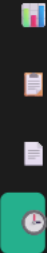
Active Requests

No active requests found.

Request History

Client ID	Client	Email	Phone	Date	Time	Status
e1ad651e-9c46-4154-ad3a-d2dea08e6e38	Shubham Gupta	shubhamgupta15m@gmail.com	2026202546	2025-09-19	00:01:00 - 00:34:00	Booked
e1ad651e-9c46-4154-ad3a-d2dea08e6e38	Shubham Gupta	shubhamgupta15m@gmail.com	2026202546	2025-09-09	21:17:00 - 22:17:00	Booked
e1ad651e-9c46-4154-ad3a-d2dea08e6e38	Shubham Gupta	shubhamgupta15m@gmail.com	2026202546	2025-09-20	20:32:00 - 22:32:00	Booked





Availability Management

Track and manage availability for users.

Agent Availability Management

Current Status: Available

Add Availability Slot

Date

mm/dd/yyyy

Start Time

--:-- --

End Time

--:-- --

Notes

Special instructions (optional)

Breaks

+ Add Break

Add Availability

Active Slots

Date	Time	Breaks	Status	Notes	Actions
07/10/2025	21:50:00 - 23:50:00	22:40:00 - 22:00:00	Available	user and book for claim settlement or to buy new policy only	Delete

History

- Dashboard
- Policy Sales
- Client Requests
- Availability Management

End Time

--:-- --

Notes

Special instructions (optional)

Breaks

+ Add Break

Add Availability

Active Slots

Date	Time	Breaks	Status	Notes	Actions
07/10/2025	21:50:00 - 23:50:00	22:40:00 - 22:00:00	Available	user and book for claim settlement or to buy new policy only	Delete

History

Date	Time	Breaks	Status	Notes
19/09/2025	00:01:00 - 00:34:00	01:20:00 - 01:30:00	Booked	checking client requests
09/09/2025	21:17:00 - 22:17:00	21:32:00 - 21:46:00	Booked	testing
20/09/2025	20:32:00 - 22:32:00	21:33:00 - 21:35:00	Booked	test
19/09/2025	00:20:00 - 02:20:00	01:00:00 - 01:20:00	Available	checking client active request
25/09/2025	16:07:00 - 18:07:00	17:07:00 - 17:10:00	Available	testingnew
10/09/2025	01:42:00 - 03:42:00	01:46:00 - 02:42:00	Available	test1
18/09/2025	23:44:00 - 02:00:00	01:00:00 - 01:10:00	Available	checking client request



# Admin Dashboard

Overview of system performance and key metrics



Total Users  
**1,247**  
+12% from last month



Active Agents  
**89**  
98% availability rate



Total Policies  
**3,421**  
+8% this quarter



Pending Claims  
**23**  
Require attention



Monthly Revenue  
**\$284,750.00**  
+15% vs last month



Active Users  
**892**  
71% of total users



## Recent Activity



New auto insurance policy created  
2 minutes ago



New user registered: john.doe@email.com  
5 minutes ago



Claim #CL-2024-001 approved  
10 minutes ago



Agent Sarah Wilson logged in  
15 minutes ago



Policy #PL-2024-089 renewed  
1 hour ago

## Quick Actions

User Management  
Manage user accounts

Agent Overview  
Monitor agent performance

Policy Review  
Review active policies

Claims Processing  
Process pending claims

## Notifications

Mark all read



A new claim has been submitted for review: claiming 10k for testing  
11d ago



View all notifications

## InsurAI Assistant



Hello! I'm InsurAI assistant. Type '/' to see options.

Type a message or / for commands

Send

Speak



Policy & Workflow Management

Create New Policy

Manage insurance policies and claims

Policies (11)

Claims (1)

Total Policies  
11

Active Policies  
10

Total Value  
₹6,884.00

Pending Items  
1

Search policies...

All Status ▾

POLICY ID	TYPE	STATUS	PREMIUM	COVERAGE	START DATE	ACTIONS
129bd466-48d8-4f1e-bb5c-a8d48eafc60c	Vehicle	Active	₹1,234.00	₹3,00,000.00	2025-09-25	<a href="#">Edit</a> <a href="#">Delete</a>
1635e693-5836-4dec-a3bb-a951971243c4	Vehicle	Active	₹1,234.00	₹3,00,000.00	2025-09-25	<a href="#">Edit</a> <a href="#">Delete</a>
1eac1f5d-16ea-4bd8-bc4c-b3e06260124c	Vehicle	Active	₹1,234.00	₹3,00,000.00	2025-09-25	<a href="#">Edit</a> <a href="#">Delete</a>
0454b48f-d775-4579-a895-1061a7c2cd7c	Health	Active	₹500.00	₹50,000.00	2025-09-25	<a href="#">Edit</a> <a href="#">Delete</a>
a4795260-75c2-4a6a-b19a-adb88b4ff4c6	Business	Active	₹1,100.00	₹1,00,000.00	2025-09-25	<a href="#">Edit</a> <a href="#">Delete</a>
53580aba-6635-4e36-bfe8-2501fc9043b5	Vehicle	Active	₹1,234.00	₹3,00,000.00	2025-09-25	<a href="#">Edit</a> <a href="#">Delete</a>
288d87b2-80b3-4376-8d61-4279f9da640b	Business	Active	₹50.00	₹1,00,00,000.00	2025-09-25	<a href="#">Edit</a> <a href="#">Delete</a>
a520c185-c00b-4f20-b01c-10610001f47f	Business	Under Review	₹50.00	₹1,00,00,000.00	2025-09-26	<a href="#">Edit</a> <a href="#">Delete</a>