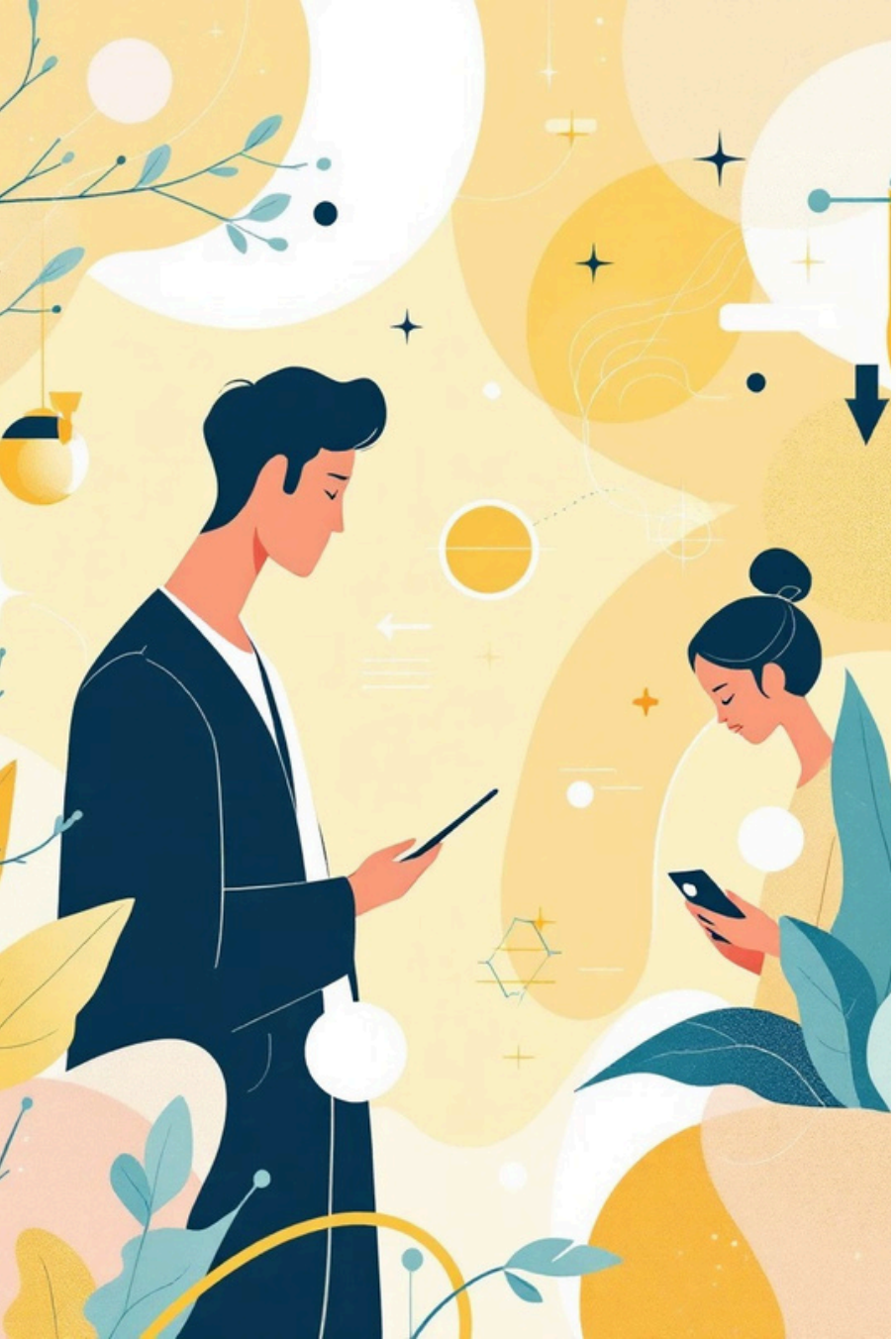


# Claim Insight
# AI-Powered Insurance Loss Description Generator

Transforming Insurance Assessments Through Artificial Intelligence

Presented to Value Momentum | Shivam Verma & Shaikh Tauhid

# The Challenge from Value Momentum

## Core Requirements

Value Momentum challenged us to develop a multimodal AI system combining vision and language models to revolutionize insurance claim processing.

- Process damage images with brief descriptions.
- Generate professional loss description paragraphs.
- Create functional web application demo.
- Focus on hail damage, flood damage, and more

## Industry PainPoints

Current manual processes create significant bottlenecks:

- Manual descriptions consume 15-30 days per claim.
- Inconsistent quality across different adjusters.
- Delayed settlements frustrate customers.
- High operational costs for field assessments

# Our Solution: Complete AI Assessment Platform

### Image Upload System

Intuitive drag-and-drop interface for damage photographs with real-time validation

### AI Damage Analysis

Multi modal vision and NLP models assess severity and identify affected components

### Loss Description Generation

Professional paragraph outputs with insurance-compliant terminology

### Complete Web Application

Functional demo with PDF reports, history tracking, and cost estimation

**We delivered exactly what Value Momentum requested,** plus extended capabilities including PDF report generation, assessment history dashboards, and intelligent cost estimation across seven damage types including hail, flood, fire, collision, storm, vandalism, and custom categories.


# How Claim Insight Works

## Input

Upload damage images and claim information through user-friendly forms

## AI Processing

Multimodalanalysiswith severity scoring and component detection algorithms

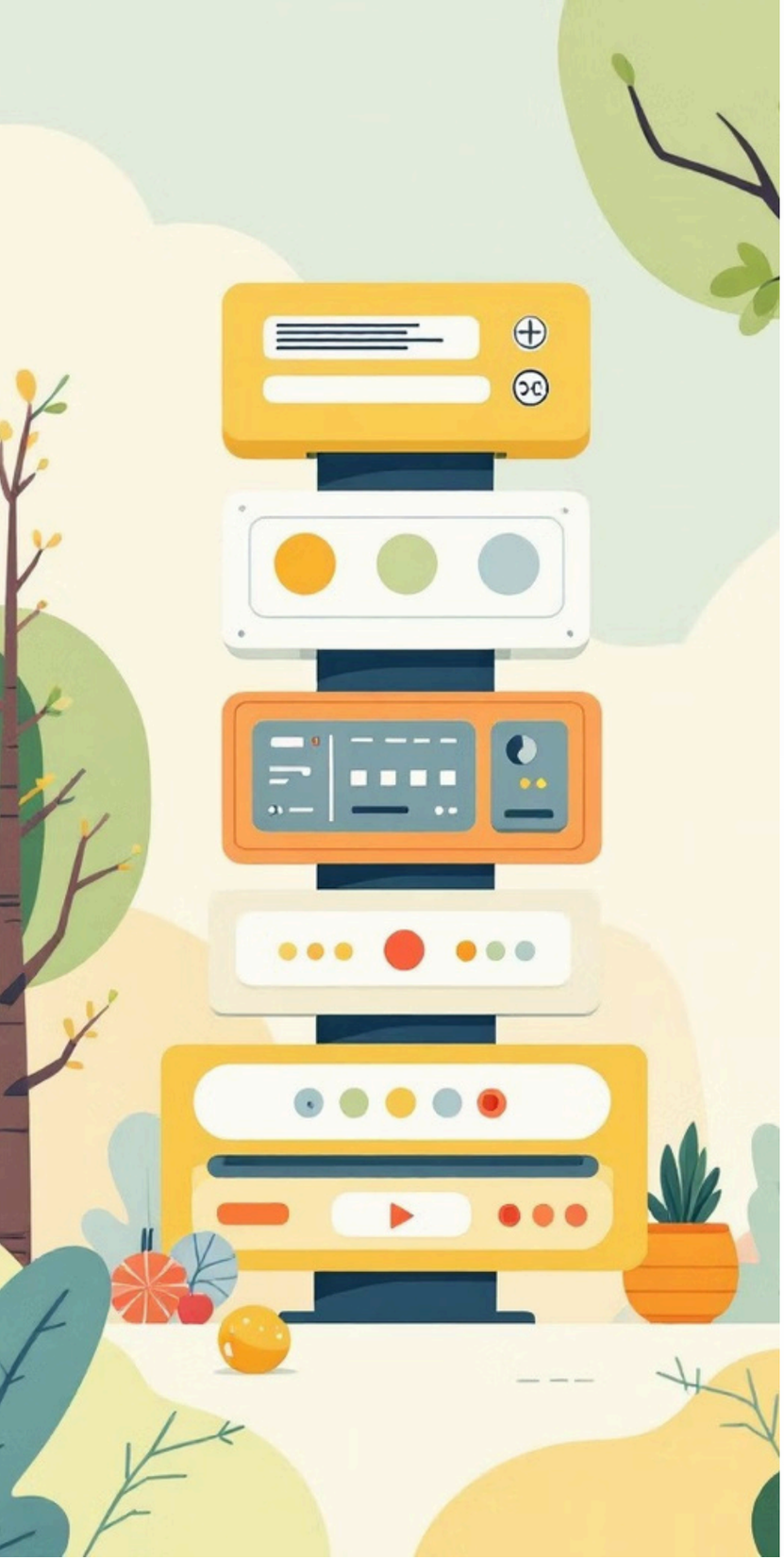
## Output

Professional loss descriptions with comprehensive PDF assessment reports

## Supported Damage Categories

Our system handles diverse insurance scenarios with precision and consistency across all major damage types encountered in the field.

- Hail damage assessment
- Flood damage analysis
- Fire damage evaluation
- Collision impact reports
- Storm damage documentation
- Vandalism assessments
- Custom damage types



# Technical Architecture

1

## Frontend Layer

React18 with TypeScript powers a modern web interface featuring drag-and-drop upload, real-time form validation, and responsive design optimised for all devices.

2

## Backend Services

Python Flask REST API handles image processing, file storage management, and PDF generation with robust error handling and validation.

3

## AI/ML Core

Multimodal system combines computer vision for damage detection, NLP for professional descriptions, severity scoring (0-100 scale), and intelligent component identification.

4

## Data Management

JSON-basedstoragesystem maintains assessment history, enables efficient search and filtering, and provides secure file management.

# AI Model Performance Metrics

**92%**

### Classification Accuracy

Damage type identification across all categories

**20s**

### Processing Speed

Average time per image analysis and report generation

**100%**

### Terminology Compliance

Professional insurance language standards met

## Multimodal AI Pipeline

01

### Image Encoding

Extractvisual featuresfrom damage photographs using computer vision (OpenCV, PIL)

02

### Damage Classification

Identifydamagetype andaffected areas with machine learning algorithms

03

### Severity Assessment

Calculate 0-100 score with Minor/Moderate/Severe level categorisation

04

### Description Generation

Createprofessionallossdescription paragraphs with NLP and rule-based enhancement

05

### Report Structuring

Formatoutputs forinsurance compliance and professional documentation standards

# AI-Generated Loss Descriptions

## Hail Damage Example

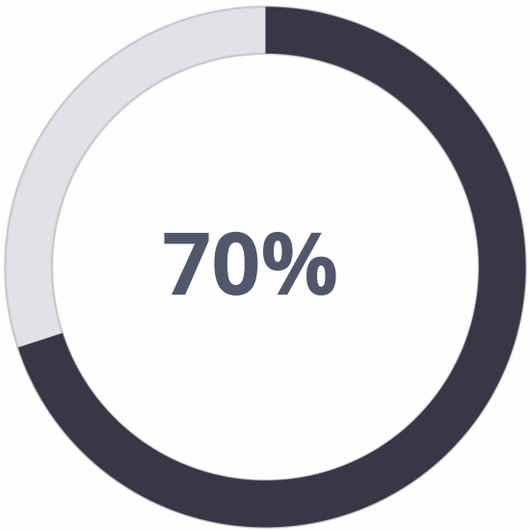
> "AI analysis indicates significant hail damage with multiple impact points across exterior surfaces. Assessment reveals 35 dents concentrated on roof panels and hood area, with average dent diameter of 2-3 cm. Surface paint shows chipping at impact sites. Severity score: 65/100 (Moderate-Severe). Affected components: Roof panels, Hood, Front quarter panels. Recommended: Professional PDR evaluation. Estimated cost range: 15,000-35,000."

## FloodDamage Example

> "Comprehensive assessmentrevealsextensive water intrusion affecting multiple levels. Analysis shows 40 cm waterline marks on interior walls, sediment deposits on flooring, and visible mould growth in lower areas. Electrical systems show corrosion at outlet levels. Severity score: 80/100 (Severe). Affected components: Drywall, Flooring, Electrical systems, HVAC components. Immediate professional drying and mould remediation required. Estimated cost range: ¹75,000-¹1,50,000."

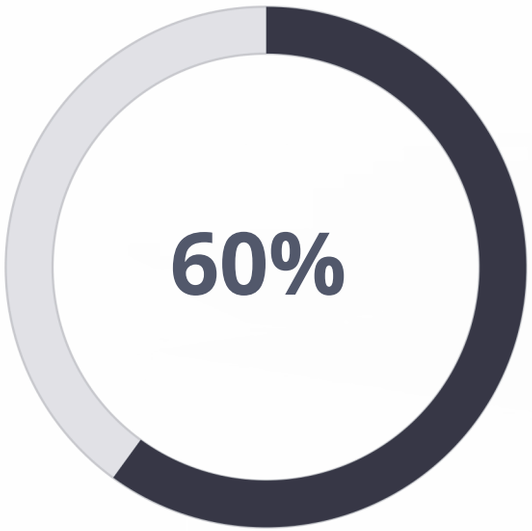
Our AI generates comprehensive, insurance-compliant descriptions that include severity scores, affected components, professional recommendations, and cost estimations 4 all formatted to industry standards and ready for immediate claim processing.

# Business Impact & Return on Investment



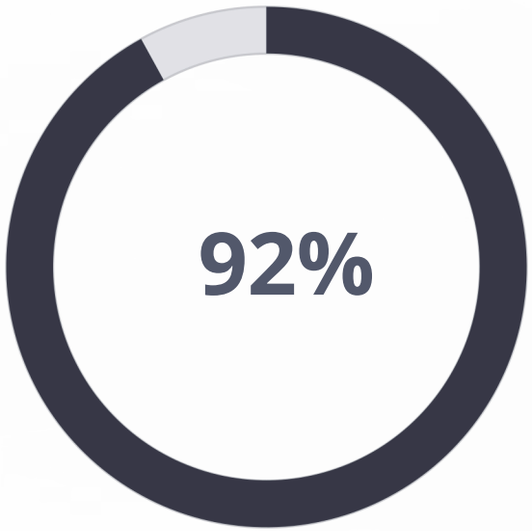

### Faster Processing

Claim assessments reduced from 15-30 days to just 2-5 days




### Cost Reduction

Lower assessment costs through automation and reduced field visits




### Quality Improvement

Consistent, standardized assessments eliminating human bias

## Operational Benefits

- Eliminated travel expenses for initial assessments
- Reduced administrative overhead significantly
- 24/7 availability for claim initiation
- Scalable to handle peak claim volumes

## Customer Experience

- Immediate claim documentation
- Transparent assessment processes
- Professional PDF reports instantly
- Faster settlements and payouts

# Technology Stack & Deployment

## Modern Frontend

React18 with TypeScript, Vite build tool, Tailwind CSS and ShadCN UI for professional styling, React Hook Form with Zod validation

## Robust Backend

Python Flask framework, OpenCV and PIL for image processing, ReportLab for PDF generation, custom AI models with no external API dependencies

## AI/ML Components

Computer vision algorithms, natural language processing, rule-based enhancement engine, severity scoring with 0-100 scale classification

## Production Ready

Docker containerisationsupport, minimal infrastructure requirements, easy integration with existing insurance systems, scalable architecture

# Ready for Production D eploym ent

### Immediate Integration

Connect seamlessly with existing insurance systems and workflows through our REST API

### Customisation Options

Adapt to specific organisational requirements, damage types, and regional compliance needs

### User Training & Support

Comprehensiveonboardingprogrammes and ongoing technical assistance for your team

**All requested features implemented and ready for deployment** and Working prototype with insurance domain compliance, professional outputs, and scalable architecture designed for enterprise production environments.

# Project Team

**Shivam Verma**

LinkedIn Profile

GitHub Profile

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LinkedIn Profile

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