



## PROBLEM STATEMENTS

### 1. Fake News Verification During Crisis

#### Background

During emergencies and major events, misinformation spreads rapidly across social media platforms. Unverified content often creates panic, confusion, and real-world harm, while fully automated censorship systems risk bias and misuse.

#### Problem Statement

Design a **rule-based information verification tool** that assists users in evaluating the credibility of online content before sharing, without enforcing censorship or deletion.

#### Key Features

- Rule-based credibility checks (source, time, language patterns)
- Context and source reliability indicators
- Clear explanations for low credibility scores
- User prompts that encourage critical thinking

#### Target Users

General public, social media users, journalists, fact-checkers

### 2. Carbon Footprint Prediction from Bank Transactions

#### Background

Individuals want to reduce their carbon footprint but lack visibility into the environmental impact of everyday purchases. Manual carbon tracking is tedious, inaccurate, and rarely sustained.

## Problem Statement

Create a system that **automatically estimates personal carbon footprint** using bank transaction data.

## Key Features

- Transaction-level carbon estimation
- Category-wise carbon breakdown (food, travel, shopping)
- Weekly and monthly impact reports
- Suggestions for lower-impact alternatives
- Progress tracking and gamified insights

## Target Users

Environmentally conscious consumers, sustainability advocates

# 3. AI-Powered Code Refactoring Assistant

## Background

Developers spend a significant amount of time maintaining and refactoring code. Existing tools provide generic recommendations and fail to adapt to project-specific coding styles.

## Problem Statement

Build an **AI-powered refactoring assistant** that learns from a codebase and delivers personalized, context-aware improvement suggestions.

## Key Features

- Learning coding patterns from existing repositories
- Detection of code smells and anti-patterns
- Context-aware refactoring suggestions
- Seamless IDE integration

- Feedback-driven improvement loop

### Target Users

Individual developers, software teams, open-source maintainers

## 4. Decentralized Academic Credential Verification System

### Background

Fake degrees and slow manual verification processes reduce trust and increase costs for organizations. Students lack portable and tamper-proof academic credentials.

### Problem Statement

Design a **decentralized credential verification system** that enables secure, instant academic verification.

### Key Features

- Tamper-proof digital academic credentials
- Instant verification without intermediaries
- Student-controlled credential ownership
- Support for micro-credentials and certifications
- Selective disclosure of academic data

### Target Users

Students, universities, employers, certification bodies

## 5. Autonomous Knowledge Validation & Research Summarization System

### Background

Researchers and students face information overload due to scattered, contradictory, and outdated research across platforms.

## Problem Statement

Build an autonomous system that **validates, cross-checks, and summarizes research information** transparently.

## Key Features

- Cross-source research validation
- Detection of contradictions and outdated claims
- Consensus vs disputed findings
- Confidence scoring with explanations

## Target Users

Students, researchers, analysts

# 6. AI-Assisted Exercise Routine Personalization System

## Background

Large-scale wellness programs often fail due to one-size-fits-all exercise routines that do not match individual capabilities or time availability.

## Problem Statement

Create an **AI-assisted system** that personalizes exercise routines for participants in mass wellness programs.

## Key Features

- Personalized workout intensity and difficulty
- Time-based routine recommendations
- Fatigue-aware rest scheduling
- Explainable exercise suggestions
- Scalable system for large user bases

## Target Users

Government bodies, corporates, NGOs, general public

# 7. Automated Incident Response & Forensics Platform

## Background

Organizations generate thousands of security alerts daily, many of which require manual investigation, leading to delayed responses and alert fatigue.

## Problem Statement

Design an **automated incident response and forensics platform** that handles detection, investigation, and reporting efficiently.

## Key Features

- Automated incident detection and classification
- Forensic evidence collection and correlation
- Recommended remediation actions
- Structured and auditable incident reports

## Target Users

Security teams, enterprises, SOC analysts

# 8. Smart Traffic Violation Analytics & Road Safety System

## Background

Traffic accidents remain high due to ineffective enforcement planning and limited data-driven decision-making.

## Problem Statement

Develop a smart analytics platform to identify high-risk traffic zones and recommend targeted safety improvements.

## Key Features

- Traffic violation and accident data analysis
- High-risk zone identification
- Enforcement and infrastructure recommendations
- Performance tracking of safety measures

## Target Users

Traffic police, transport departments, urban planners

# 9. Citizen Skill Volunteering & Emergency Response Platform

## Background

During disasters and civic emergencies, skilled volunteers are available but cannot be mobilized efficiently due to lack of coordination.

## Problem Statement

Build a real-time platform that matches **verified citizen skills** with emergency and civic needs.

## Key Features

- Skill verification mechanisms
- Location-based real-time matching
- Emergency escalation workflows
- Volunteer activity tracking and reporting

## Target Users

Government agencies, NGOs, volunteers, disaster response teams

## 10. National Skill Gap Intelligence & Career Mapping Platform

### Background

A growing mismatch between industry skill demand and workforce capabilities leads to unemployment and inefficient training programs.

### Problem Statement

Design a system that analyzes job market data to identify skill gaps and map relevant career and training pathways.

### Key Features

- Job market trend analysis
- Skill gap identification
- Training and course recommendations
- Career path <https://meet.google.com/oma-fphy-nwww> way mapping

### Target Users

Students, job seekers, training institutes, policymakers