

Ministry of Education, Government of India

AI-Based Early Dropout Risk Prediction & Intervention System

1 Background & Organizational Context

The **Ministry of Education, Government of India** has reported increasing dropout rates in Tier-2 and Tier-3 engineering colleges.

Institutions collect large volumes of student data including:

- Attendance records
- Internal assessment marks
- Semester results
- Fee payment history
- LMS engagement metrics
- Scholarship status

However, these datasets remain **isolated and underutilized**.

Academic counselors often identify at-risk students only after performance has severely declined — making intervention reactive rather than proactive.

The Ministry wants a **predictive AI-driven system** that flags potential dropout risks early and provides explainable insights for faculty intervention.

2 Problem Statement

Design and develop an AI-based predictive system that analyzes structured academic datasets and identifies students at risk of dropping out within the next academic cycle.

The system must:

- Predict dropout risk probability
- Highlight contributing factors
- Provide an intervention recommendation panel
- Present results via an intuitive web dashboard

The solution should demonstrate a working predictive prototype using provided or simulated datasets.

3 Minimum Deliverables (12-Hour Scope)

- ✓ CSV data ingestion
- ✓ Basic preprocessing (missing value handling, encoding)

- ✓ Binary classification model (Logistic Regression / Random Forest / XGBoost etc.)
 - ✓ Risk prediction with probability score
 - ✓ Feature importance visualization
 - ✓ Dashboard showing:
 - Total students
 - High-risk count
 - Department-wise distribution
 - Individual student explanation
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AIML-02

National Skill Development Corporation (NSDC)

AI-Based Resume Intelligence & Skill Gap Analysis System

1 Background & Organizational Context

The **National Skill Development Corporation (NSDC)** works toward improving employability and bridging India's skill gap.

Recruiters across industries receive thousands of resumes daily. However:

- Resume formats are inconsistent.
- Keywords may not accurately represent skill depth.
- Candidates often apply to roles without meeting minimum criteria.
- Recruiters manually filter resumes — wasting time and resources.

NSDC aims to develop an **AI-powered Resume Intelligence System** that:

- Evaluates resumes against Job Descriptions (JD)
- Computes match scores
- Identifies missing skills
- Suggests personalized improvement strategies

The goal is not just filtering — but *career guidance*.

2 Problem Statement

Design and implement an NLP-based intelligent resume analysis system that matches candidate resumes against a given job description and generates:

- Skill match score

- Identified core skills
- Missing skill gaps
- Resume improvement suggestions
- Visual comparison dashboard

The system should demonstrate semantic understanding rather than basic keyword matching.

3 Minimum Deliverables

- ✓ Resume upload module
- ✓ JD input module
- ✓ Skill extraction logic
- ✓ Matching score generation
- ✓ Skill gap visualization
- ✓ Dashboard UI displaying:
 - Overall Match %
 - Skill heatmap
 - Missing skills list
 - Feedback suggestions

AIML-03

Indian Railways

Intelligent Complaint Categorization & Pattern Detection System

1 Background & Organizational Context

Indian Railways, one of the largest transportation networks in the world, receives thousands of passenger complaints daily through:

- Email
- Web grievance portals
- Mobile apps
- Twitter and social platforms

These complaints relate to:

- Cleanliness
- Delay issues

- Staff behavior
- Food quality
- Safety concerns
- Ticketing problems

Currently, complaints are:

- Manually categorized
- Routed slowly
- Analyzed only at a summary level

This leads to:

- Delayed resolution
- Overlooked recurring issues
- Poor prioritization of high-severity problems

Indian Railways aims to deploy an **AI-driven complaint intelligence system** that automatically categorizes complaints, detects emerging problem clusters, and flags urgent cases.

2 Problem Statement

Design and develop an AI-based system that processes textual complaints submitted by railway passengers and performs:

- Automatic complaint categorization
- Detection of recurring issue clusters
- Identification of high-priority/critical complaints
- Visualization of complaint trends

The system should assist railway authorities in **prioritizing and responding efficiently**.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Text preprocessing pipeline
- ✓ Classification model
- ✓ Clustering visualization
- ✓ Severity tagging system
- ✓ Interactive dashboard
- ✓ Basic evaluation metrics (Accuracy/F1)

All India Institute of Medical Sciences (AIIMS)

AI-Based Medical Report Simplification & Patient Explanation System

1 Background & Organizational Context

The All India Institute of Medical Sciences (AIIMS) generates thousands of diagnostic reports daily, including:

- Blood test reports
- MRI/CT scan summaries
- Pathology findings
- Health check-up panels

While medically accurate, these reports:

- Contain technical terminology
- Use abbreviations unfamiliar to patients
- Lack contextual explanation
- Cause confusion and anxiety

Patients frequently search the internet to interpret results, which can lead to misinformation.

AIIMS proposes development of an **AI-powered Medical Report Simplification Tool** that converts structured medical reports into patient-friendly explanations while preserving clinical accuracy.

The system must not replace doctors, but assist patients in understanding their reports before consultation.

2 Problem Statement

Design and develop an AI-driven system that takes structured medical test data or diagnostic summaries as input and generates:

- Simple language explanation
- Highlighted abnormal parameters
- Risk indication level (Low / Moderate / High)
- Suggested next-step consultation guidance

The system should demonstrate explainable and responsible AI usage.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Structured input parser
 - ✓ Range comparison logic
 - ✓ Automated explanation generator
 - ✓ Risk scoring logic
 - ✓ Dashboard interface
 - ✓ Disclaimer integration
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AIML-05

Election Commission of India (ECI)

AI-Based Election Misinformation Detection & Risk Scoring System

1 Background & Organizational Context

The **Election Commission of India (ECI)** conducts the world's largest democratic exercise.

During election cycles, digital platforms experience a surge of:

- Misleading claims
- Fake announcements
- Edited media content
- False voting dates
- Fabricated candidate statements

Manual fact-checking is slow and reactive.

By the time misinformation is flagged, it may have already spread widely.

To strengthen electoral integrity, ECI proposes an **AI-based early misinformation detection system** capable of flagging suspicious textual content and assigning credibility risk scores in near real-time.

This system is intended to assist monitoring teams — not replace human fact-checkers.

2 Problem Statement

Design and develop an AI-powered system that analyzes short-form textual content (social media posts, SMS forwards, web comments) and classifies them into:

- Likely Verified Information
- Potential Misinformation
- High-Risk Misinformation

Additionally, the system must:

- Provide a confidence score

- Highlight suspicious keywords or reasoning
- Present monitoring dashboard insights

3 Minimum Deliverables (12-Hour Scope)

- ✓ Text preprocessing pipeline
 - ✓ Trained classification model
 - ✓ Confidence score output
 - ✓ Keyword highlighting logic
 - ✓ Monitoring dashboard
 - ✓ Accuracy / F1 score evaluation
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AIML-06

State Electricity Distribution Board

AI-Based Short-Term Power Demand Forecasting & Load Optimization System

1 Background & Organizational Context

A State Electricity Distribution Board (SEDB) is responsible for supplying power to millions of households, industries, hospitals, and public infrastructure.

One of the biggest operational challenges faced by electricity boards is:

- Sudden demand surges
- Load imbalance across regions
- Overproduction or underutilization of power
- Grid instability during peak seasons

Current short-term demand estimation is often:

- Based on historical averages
- Weather assumptions
- Manual planning

Inaccurate forecasting can lead to:

- Forced load shedding
- Transformer overload
- Energy wastage
- Financial losses

The board aims to deploy an **AI-powered short-term demand forecasting system** that predicts next-day electricity demand for proactive grid management.

2 Problem Statement

Design and develop a machine learning-based system that predicts short-term electricity demand (next 24 hours or next day) using historical consumption data.

The system must:

- Analyze past usage trends
- Identify seasonal/periodic patterns
- Forecast future load
- Visualize predicted vs historical demand
- Provide error analysis

3 Minimum Deliverables (12-Hour Scope)

- ✓ Time-series ingestion
- ✓ Forecasting model
- ✓ Evaluation metrics
- ✓ Interactive visualization
- ✓ One-step future prediction

Bonus: Weather-based forecasting improvement.

AIML-07

National Highways Authority of India (NHAI)

AI-Based Road Accident Hotspot Detection & Risk Prediction System

1 Background & Organizational Context

The **National Highways Authority of India (NHAI)** oversees thousands of kilometers of national highways.

India records a high number of road accidents each year due to:

- Speeding
- Poor visibility zones
- Poor road geometry
- Weather conditions
- Heavy traffic density

Large volumes of accident-related data exist, including:

- Location coordinates
- Time of incident
- Weather conditions
- Vehicle type
- Casualty severity

However, this data is often used reactively — after accidents occur.

NHAI seeks to implement a **proactive AI-based system** capable of:

- Identifying accident-prone zones
- Detecting risk patterns
- Predicting high-risk periods or locations

This will enable targeted safety interventions.

2 Problem Statement

Design and develop a machine learning-based system that analyzes historical road accident data and:

- Identifies accident hotspots
- Predicts accident risk levels for different zones
- Visualizes geographic risk mapping
- Highlights contributing factors

The system must demonstrate spatial understanding and data-driven insights.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Data preprocessing
- ✓ Clustering for hotspot detection
- ✓ Risk prediction model
- ✓ Visual map dashboard
- ✓ Basic evaluation metric

Bonus: Time-of-day risk trend analysis.

Emotion-Aware Adaptive Study Assistant

1 Background & Organizational Context

LearnSphere Technologies, an Indian EdTech startup, provides AI-powered online test preparation for competitive exams such as:

- GATE
- UPSC
- JEE
- CAT

Despite strong content quality, the platform reports:

- High dropout rates after 3–4 weeks
- Reduced student engagement
- Negative feedback during mock test season
- Stress-related discontinuation

Current chatbot support provides static explanations without considering the student's emotional state.

However, research shows that emotional engagement significantly improves retention and learning outcomes.

The organization now aims to build an **Emotion-Aware AI Study Assistant** that dynamically adjusts tone, explanation depth, and response style based on the detected emotional state of the student.

2 Problem Statement

Design and develop an AI-driven conversational assistant that:

- Analyzes student text input
- Detects emotional tone (e.g., frustrated, confused, confident, anxious)
- Adapts response style accordingly
- Provides supportive, context-aware academic guidance

The system must demonstrate emotional intelligence without making medical or psychological claims.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Real-time emotion classification
- ✓ Adaptive response logic
- ✓ Working chat interface
- ✓ Basic context handling
- ✓ Model evaluation metric

AIML-09

Reserve Bank of India (RBI)

AI-Based Financial Transaction Anomaly & Fraud Detection System

1 Background & Organizational Context

The **Reserve Bank of India (RBI)** supervises digital payment systems including:

- UPI
- Credit/Debit card transactions
- Net banking transfers
- Wallet payments

With rapid digital adoption, transaction volume has increased exponentially. Alongside this growth, fraudulent activities have also risen, including:

- Unauthorized high-value transfers
- Rapid micro-transaction laundering
- Account takeover anomalies
- Suspicious geo-location shifts

Traditional rule-based fraud detection systems rely on predefined thresholds (e.g., block transactions above ₹50,000), which:

- Miss subtle fraud patterns
- Produce excessive false positives
- Fail to detect novel attack methods

RBI aims to develop an **AI-powered anomaly detection system** capable of identifying suspicious transactions dynamically using behavioral pattern analysis.

2 Problem Statement

Design and develop a machine learning-based anomaly detection system that analyzes financial transaction data and:

- Identifies suspicious transactions
- Assigns anomaly risk scores

- Visualizes fraud patterns
- Explains why a transaction is flagged

The system should demonstrate data-driven detection beyond basic threshold logic.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Data preprocessing
- ✓ At least one anomaly detection model
- ✓ Risk scoring system
- ✓ Dashboard visualization
- ✓ Model evaluation (AUC / Accuracy / Precision-Recall)

Bonus:

Compare 2 models performance.

AIML-10

Indian Space Research Organisation (ISRO)

AI-Based Satellite Image Land Use & Terrain Classification System

1 Background & Organizational Context

The **Indian Space Research Organisation (ISRO)** captures massive volumes of satellite imagery daily for purposes such as:

- Urban planning
- Agricultural monitoring
- Forest coverage tracking
- Water body detection
- Disaster assessment

Manual classification of satellite images is:

- Time-consuming
- Resource-intensive
- Difficult to scale

Accurate land-use classification enables:

- Urban expansion analysis
- Climate research

- Crop yield forecasting
- Environmental conservation

ISRO seeks to prototype an **AI-powered satellite image classification system** that can automatically classify terrain types from image patches.

2 Problem Statement

Design and develop a machine learning or deep learning-based system that classifies satellite image patches into predefined land categories such as:

- Urban Area
- Agricultural Land
- Forest
- Water Body
- Barren Land

The system must:

- Train on labeled image data
- Predict terrain class
- Provide accuracy metrics
- Visualize classification outputs

3 Minimum Deliverables (12-Hour Scope)

- ✓ Image preprocessing pipeline
- ✓ Trained image classification model
- ✓ Accuracy evaluation
- ✓ Interactive prediction demo
- ✓ Visual performance reporting

Bonus:

Upload custom satellite patch for prediction.

WD-01

Digital India Mission

Unified Citizen Services Super Dashboard (One Nation, One Portal Prototype)

1 Background & Organizational Context

Under the **Digital India Mission**, the Government of India has launched multiple citizen-facing portals, including:

- DigiLocker
- Passport Seva
- Income Tax Portal
- State grievance portals
- Scholarship portals
- Utility service platforms

However, these systems operate in silos.

Citizens often:

- Manage multiple logins
- Struggle to track application status
- Miss notifications
- Visit multiple websites for different services

This fragmentation results in:

- Reduced digital adoption
- Frustration among elderly users
- Poor transparency across service stages

The Government aims to prototype a **Unified Citizen Services Dashboard** that acts as a single digital entry point for key government services.

This hackathon build is a simulated proof-of-concept.

2 Problem Statement

Design and develop a unified web platform that:

- Aggregates multiple simulated public services into one dashboard
- Provides single sign-on experience (mocked)
- Displays service status updates
- Sends centralized notifications

- Enables grievance tracking

The system must demonstrate:

- Role-based access
- Clean UX
- Modular integration model

3 Minimum Deliverables (12-Hour Scope)

- ✓ Login system
- ✓ Unified dashboard
- ✓ Minimum 4 simulated services
- ✓ Status tracking
- ✓ Notification center

Bonus:

Admin management panel.

WD-02

University Grants Commission (UGC)

Academic Compliance & Accreditation Tracking Portal

1 Background & Organizational Context

The **University Grants Commission (UGC)** oversees higher education institutions across India and ensures compliance with:

- NAAC accreditation standards
- NBA requirements
- Faculty qualification norms
- Infrastructure benchmarks
- Curriculum updates
- Research output reporting

Currently:

- Universities maintain compliance documents in spreadsheets
- Evidence submissions are scattered across departments
- Deadlines are missed

- Compliance tracking lacks visibility

Accreditation processes often become last-minute rush operations due to lack of a centralized tracking mechanism.

UGC aims to build a **centralized compliance tracking web platform** that enables institutions to monitor academic compliance status in real-time.

This hackathon version should prototype such a portal.

2 Problem Statement

Design and develop a web-based compliance tracking platform that:

- Allows departments to upload compliance evidence
- Tracks requirement progress
- Displays accreditation readiness score
- Sends deadline alerts
- Provides department-level transparency dashboard

The platform should simulate institutional monitoring of regulatory compliance.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Role-based login
- ✓ Compliance checklist module
- ✓ Scoring system
- ✓ File upload simulation
- ✓ Visual dashboard

Bonus:

Export compliance report as PDF.

WD-03

Startup India Initiative

Intelligent Investor-Startup Matchmaking & Deal Discovery Portal

1 Background & Organizational Context

Under the **Startup India Initiative**, thousands of early-stage startups register every year seeking:

- Seed funding
- Angel investors

- Venture capital
- Strategic partnerships

Simultaneously, investors:

- Receive numerous cold pitches
- Struggle to filter relevant opportunities
- Spend time manually evaluating sector alignment

Current ecosystem challenges:

- Startup–investor mismatch
- Poor discoverability
- Inefficient communication
- Lack of structured digital matching

Startup India proposes a **centralized matchmaking portal prototype** where:

- Startups create structured profiles
- Investors specify interest parameters
- System computes alignment score
- Both parties discover mutually relevant opportunities

This hackathon version should focus on intelligent matching and UX clarity.

2 Problem Statement

Design and develop a web-based matchmaking platform that:

- Allows startups to register and create pitch profiles
- Allows investors to define investment preferences
- Computes match score between startups and investors
- Displays ranked matches
- Enables connection requests

The platform must simulate a structured, data-driven discovery engine.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Role-based authentication
- ✓ Profile creation system

- ✓ Matching logic engine
- ✓ Ranked recommendation dashboard
- ✓ Filtering feature

Bonus:

Messaging simulation feature.

WD-04

Smart City Mission – Ministry of Housing & Urban Affairs

Geo-Enabled Public Issue Reporting & Resolution Portal

1 Background & Organizational Context

Under the **Smart City Mission**, urban local bodies aim to improve civic services such as:

- Road maintenance
- Street lighting
- Garbage collection
- Drainage management
- Public sanitation

Currently, citizens report issues through:

- WhatsApp groups
- Offline complaints
- Disconnected municipal portals

Challenges include:

- Lack of geo-tagging
- No transparent resolution tracking
- Poor escalation management
- Duplicate complaints

Municipal authorities lack consolidated insights into:

- High-frequency issue zones
- Resolution turnaround time
- Department accountability

The Ministry proposes a **Geo-Enabled Smart Civic Complaint Portal** that allows real-time issue reporting, tracking, and heatmap-based analysis.

This hackathon version should demonstrate location-based reporting and administrative dashboard monitoring.

2 Problem Statement

Design and develop a web-based platform that enables:

- Citizens to report civic issues with geo-location
- Upload supporting images
- Track resolution status
- Municipal authorities to manage, prioritize and close complaints
- Heatmap visualization of recurring issues

The solution must demonstrate location intelligence and transparency mechanisms.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Role-based system (Citizen/Admin)
- ✓ Geo-tagged complaint submission
- ✓ Status update workflow
- ✓ Map visualization
- ✓ Basic analytics dashboard

Bonus:

Real-time update refresh.

WD-05

National Institute of Technology (NIT Consortium)

Unified Campus Super App (Web-Based Academic & Service Dashboard)

1 Background & Organizational Context

Across India, institutions like **NITs, IITs, and large state universities** operate multiple independent digital systems:

- LMS portal
- Attendance portal
- Hostel management
- Exam result portal

- Placement system
- Event registration site
- Library database

Students must:

- Log into multiple platforms daily
- Track deadlines manually
- Switch interfaces repeatedly
- Miss important notifications

Faculty similarly use separate portals for:

- Attendance upload
- Result entry
- Course materials

The NIT Consortium proposes a **Unified Campus Super App (Web-based prototype)** to streamline academic and campus services under a single intelligent dashboard.

2 Problem Statement

Design and develop a centralized, role-based campus dashboard web application that consolidates:

- Academic tracking
- Attendance monitoring
- Event notifications
- Library status
- Placement updates

The solution must simulate integration of multiple campus services through modular design.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Role-based authentication
- ✓ Unified dashboard
- ✓ Minimum 5 modules
- ✓ Notification logic
- ✓ Responsive UI

Bonus:

Backend API simulation.

Ministry of Tourism, Government of India

Smart Travel Itinerary Planner & Personalized Trip Builder

1 Background & Organizational Context

The **Ministry of Tourism, Government of India** promotes domestic and international travel across:

- Heritage sites
- Eco-tourism circuits
- Spiritual tourism
- Adventure tourism
- Coastal destinations

However, travelers often face difficulty in:

- Planning optimized itineraries
- Balancing budget constraints
- Selecting suitable destinations based on interests
- Managing time efficiently
- Finding region-specific attractions

Existing platforms are either:

- Too generic
- Over-commercialized
- Not personalized

The Ministry proposes a **Smart Travel Planning Web Portal** that generates personalized itineraries based on user preferences, budget, and duration.

This hackathon prototype should demonstrate smart filtering, dynamic itinerary building, and user experience innovation.

2 Problem Statement

Design and develop a web-based travel planning platform that:

- Collects user travel preferences
- Filters destinations based on interests and budget

- Generates day-wise itinerary suggestions
- Displays cost estimation
- Provides shareable travel plan

The system must demonstrate personalization logic through structured filtering.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Preference form
- ✓ Dataset-based recommendation logic
- ✓ Itinerary generator
- ✓ Cost estimation display
- ✓ Responsive UI

Bonus:

Map integration.

WD-07

National Health Mission (NHM)

Real-Time Hospital Appointment & Bed Availability Monitoring System

1 Background & Organizational Context

Under the **National Health Mission (NHM)**, government and affiliated hospitals manage:

- Outpatient Department (OPD) appointments
- Specialist consultations
- Emergency admissions
- ICU and general ward bed allocation

Challenges faced:

- Patients wait long hours due to poor appointment planning
- No unified visibility of bed availability
- Overbooking of certain doctors
- Lack of transparency during emergencies

In many Tier-2 and Tier-3 cities, patients physically visit hospitals just to check:

- Doctor availability

- Available beds
- Appointment slots

NHM proposes a **Real-Time Hospital Resource Monitoring Web Portal** that:

- Displays available beds
- Shows doctor appointment slots
- Allows appointment booking
- Provides admin monitoring dashboard

The hackathon version should simulate live hospital system management.

2 Problem Statement

Design and develop a web-based hospital management dashboard that:

- Displays doctor-wise appointment slots
- Allows simulated booking
- Tracks bed availability in real-time
- Provides admin monitoring interface
- Shows occupancy analytics

The system must demonstrate resource tracking and appointment workflow.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Patient booking system
- ✓ Slot reduction logic
- ✓ Bed tracking module
- ✓ Admin control panel
- ✓ Analytics dashboard

Bonus:

Email confirmation simulation.

WD-08

Ministry of Micro, Small & Medium Enterprises (MSME)

MSME Grant & Subsidy Application Tracking and Approval Portal

1 Background & Organizational Context

The **Ministry of MSME, Government of India** runs various schemes to support small and medium businesses, such as:

- Startup capital subsidy
- Women entrepreneur grants
- Rural enterprise support schemes
- Manufacturing incentives
- Technology upgradation funds

However, the current ecosystem faces challenges:

- Businesses struggle to track application status
- Delays due to document re-verification
- Lack of transparent approval workflow
- Manual routing between departments
- No centralized progress monitoring dashboard

Entrepreneurs often need to physically visit offices or repeatedly call officials to check status.

The Ministry proposes a **Digitized Grant Application Tracking Portal** to enable transparent multi-level application review workflow and real-time status tracking.

This hackathon prototype should demonstrate workflow-based processing logic.

2 Problem Statement

Design and develop a web-based grant application portal that:

- Allows MSMEs to submit subsidy applications
- Upload required documents (simulation acceptable)
- Tracks application through multi-stage approval workflow
- Enables officers to review and approve/reject applications
- Provides real-time status transparency to applicants

The solution must demonstrate document workflow management and approval lifecycle tracking.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Role-based login
- ✓ Application submission system
- ✓ Multi-stage approval workflow

- ✓ Status tracking logic
- ✓ Dashboard with application metrics

Bonus:

Notification system for status update.

WD-09

Open Government Data (OGD) Platform – Government of India

CSV-to-Interactive Analytics Dashboard Generator

1 Background & Organizational Context

The **Open Government Data (OGD) Platform – India** publishes thousands of public datasets including:

- Education statistics
- Health data
- Pollution levels
- Crime reports
- Agricultural outputs
- Employment statistics

However:

- Most datasets are in raw CSV/Excel format
- Non-technical users struggle to interpret data
- Manual visualization requires specialized tools (Power BI, Tableau)
- Government officials spend time generating repetitive charts

To democratize public data access, OGD proposes an intelligent **Web-Based CSV to Dashboard Generator Tool** that:

- Uploads dataset
- Automatically detects column types
- Generates relevant charts
- Provides filterable analytics

The hackathon prototype must focus on automation logic and visual clarity.

2 Problem Statement

Design and develop a web platform where users can:

- Upload CSV/Excel file
- Automatically detect data schema
- Generate appropriate visualizations
- Apply filters interactively
- Share or export dashboard

The platform should intelligently map data types to suitable chart formats.

3 Minimum Deliverables (12-Hour Scope)

- ✓ CSV upload
- ✓ Auto-detection of schema
- ✓ At least 3 chart types
- ✓ Interactive filters
- ✓ Summary statistics panel

Bonus:

Real-time chart refresh on filter change.

WD-10

National Social Impact & NGO Transparency Network (NSITN)

Donation Transparency & Impact Monitoring Web Portal

1 Background & Organizational Context

Thousands of NGOs across India work in sectors such as:

- Education
- Healthcare
- Rural development
- Disaster relief
- Women empowerment

While donations continue to increase, donors often face challenges:

- Lack of transparency in fund utilization
- Delayed or unclear impact reporting

- Minimal real-time tracking of projects
- Difficulty identifying credible NGOs

Many NGOs maintain basic websites without structured donation tracking systems.

The proposed **National Social Impact & NGO Transparency Network (NSITN)** aims to develop a unified digital platform where:

- NGOs can display donation receipts and fund allocation
- Donors can monitor how contributions are used
- Real-time project impact can be visualized
- Financial transparency improves public trust

The hackathon version should demonstrate structured donation tracking and public transparency features.

2 Problem Statement

Design and develop a web-based platform that:

- Allows NGOs to register projects
- Enables donors to contribute (simulated payments)
- Tracks fund allocation
- Displays impact metrics
- Provides public transparency dashboard

The system must simulate real-time financial transparency and measurable impact reporting.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Project creation module
- ✓ Donation simulation
- ✓ Fund tracking logic
- ✓ Impact dashboard
- ✓ Role-based access

Bonus:

Downloadable donor receipt simulation.

CB-01

Ministry of Electronics & Information Technology (MeitY)

DigiLocker 2.0 – Verifiable Academic Credential System Using Blockchain

1 Background & Organizational Context

The Government of India operates **DigiLocker**, a digital document wallet system that allows citizens to store:

- Aadhaar
- Driving License
- PAN
- Academic certificates

However, challenges still persist in academic credential verification:

- Recruiters manually verify university marksheets
- Fake degree certificates circulate frequently
- Institutions spend significant time verifying records
- Students repeatedly upload and re-submit same documents

There is a need for a **tamper-proof, instantly verifiable credentialing system** where:

- Institutions issue certificates once
- Students control sharing access
- Employers can instantly verify authenticity
- No central dependency for re-validation

MeitY proposes a **Blockchain-Based Verifiable Academic Credential System (DigiLocker 2.0 Prototype)**.

2 Problem Statement

Design and develop a decentralized prototype system that:

- Allows institutions to issue academic credentials
- Stores credential hash on blockchain (testnet/local chain)
- Enables students to share verification link/QR
- Allows third party to verify document authenticity
- Detects tampering

The system must demonstrate integrity assurance using cryptographic methods.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Hash generation logic
- ✓ Blockchain storage of hash

- ✓ Certificate verification mechanism
- ✓ Role-based interface

- ✓ Tampering demonstration

Bonus:

Use MetaMask wallet integration.

CB-02

Indian Computer Emergency Response Team (CERT-In)

AI-Powered Anti-Phishing Detection Browser Extension for Students

1 Background & Organizational Context

The **Indian Computer Emergency Response Team (CERT-In)** monitors cyber threats across India.

Educational institutions and students are increasingly targeted by:

- Fake scholarship emails
- Fraudulent internship portals
- Phishing login pages
- Cloned university websites
- Hackathon scam registration links

Traditional spam filters often fail because:

- Phishing URLs mimic legitimate domains
- Content looks contextually correct
- Targeted emails evade generic filters

CERT-In aims to prototype an **AI-powered browser extension** that detects phishing attempts in real time and alerts users before credential submission.

2 Problem Statement

Design and develop a browser-based phishing detection tool that:

- Analyzes visited URLs
- Examines webpage content
- Scores phishing risk probability
- Warns users visually

- Logs suspicious activity

The tool must function as a real-time client-side detection system.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Functional browser extension
- ✓ Risk scoring logic
- ✓ Warning popup system
- ✓ URL feature extraction
- ✓ Phishing log view

Bonus:

Backend logging simulation.

CB-03

National Technical Events Council (NTEC)

Secure Hackathon Project Submission & Tamper-Proof Integrity System

1 Background & Organizational Context

The **National Technical Events Council (NTEC)** oversees multiple national hackathons and innovation challenges annually.

Current hackathon submission challenges include:

- Last-minute code replacement
- Post-deadline project modification
- Disputes over originality
- Unverified GitHub changes
- Lack of submission timestamp integrity

Organizers rely heavily on:

- Local file submissions
- GitHub links
- Manual review checks

However, there is no cryptographic proof ensuring that:

- A submitted file wasn't modified post-deadline
- Multiple teams didn't submit identical modified code

- Code ownership can be validated

NTEC proposes a **Secure Hackathon Submission Platform** that uses cryptographic hashing and timestamp anchoring to guarantee project integrity.

This hackathon version should demonstrate verifiable submission proof.

2 Problem Statement

Design and develop a secure submission portal that:

- Accepts project file uploads
- Generates cryptographic hash
- Stores submission hash with timestamp
- Detects any modification after submission
- Allows judges to verify submission authenticity

The solution must demonstrate tamper detection using cryptographic integrity validation.

3 Minimum Deliverables (12-Hour Scope)

- ✓ File upload module
- ✓ SHA-256 hash generation
- ✓ Hash storage
- ✓ Verification mechanism
- ✓ Role-based interface

Bonus:

Blockchain timestamp anchoring.

CB-04

All India Student Governance Council (AISGC)

Transparent Student Fund Management System Using Blockchain

1 Background & Organizational Context

Across universities in India, student bodies and technical committees manage funds for:

- College festivals
- Hackathons
- Cultural events
- Workshops

- Guest lectures

Common challenges include:

- Lack of financial transparency
- Delayed reimbursement tracking
- Manual cash-flow records
- Mistrust among stakeholders
- No immutable transaction history

Even if no fraud occurs, lack of visible ledger creates:

- Conflicts
- Miscommunication
- Budget uncertainty

The All India Student Governance Council (AISGC) proposes a lightweight **Blockchain-Based Transparent Fund Management System** where:

- Transactions are publicly visible
- Spending requires multi-signature approval
- Fund usage is tamper-proof
- Audit trails are immutable

The hackathon version should demonstrate transparent smart-contract based transaction recording.

2 Problem Statement

Design and develop a decentralized application (DApp) that:

- Records fund transactions
- Requires multi-role approval for high-value spending
- Maintains immutable ledger
- Displays real-time expense dashboard
- Allows public viewing of expenditure history

The solution must implement blockchain-based transparency logic.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Smart contract for transactions
- ✓ Multi-role approval logic

- ✓ DApp interface
- ✓ Ledger display
- ✓ Balance calculation

Bonus:

MetaMask wallet integration.

CB-05

Department of Science & Technology (DST), Government of India

Secure Research Data Sharing & Encrypted Collaboration Platform

1 Background & Organizational Context

The **Department of Science & Technology (DST)** supports research collaboration across:

- IITs
- NITs
- National Research Labs
- Government-funded projects
- Industry-academic partnerships

Research teams frequently share:

- Confidential datasets
- Patent-sensitive files
- Experimental results
- Pre-publication manuscripts

Current challenges include:

- Email-based sharing
- Unauthorized forwarding
- Data leakage
- Lack of access logging
- No revocation control

Sensitive research data often travels through insecure channels, creating IP risks.

DST proposes a **Secure Encrypted Data Sharing Platform** that:

- Encrypts files before storage
- Controls user-based access
- Logs every file access event
- Allows time-bound sharing
- Ensures confidentiality and traceability

The hackathon prototype should demonstrate encryption, secure access control, and audit logging.

2 Problem Statement

Design and develop a secure web-based file sharing platform that:

- Encrypts uploaded files
- Allows controlled access sharing
- Logs access attempts
- Enables revocation of access
- Displays audit history

The solution must demonstrate encryption and access control mechanisms effectively.

3 Minimum Deliverables (12-Hour Scope)

- ✓ File encryption logic
- ✓ Secure file upload
- ✓ Access control enforcement
- ✓ Audit log system
- ✓ Revocation functionality

Bonus:

Show encrypted file content in database.

● ARVR-01

University Smart Infrastructure Authority (USIA)

AR-Based Smart Campus Navigation & Contextual Information System

1 Background & Organizational Context

Large campuses such as IITs, NITs, and state universities span hundreds of acres and include:

- Multiple academic blocks

- Hostels
- Laboratories
- Auditoriums
- Research centers
- Administrative offices

Challenges faced by:

New Students & Visitors:

- Difficulty locating lecture halls
- Missing events due to navigation confusion
- Wasted time searching buildings

Emergency Scenarios:

- Delayed access to nearest medical center
- Confusion during evacuation

Traditional static maps:

- Lack interactivity
- Do not adapt to real-time context
- Are not intuitive for first-time visitors

The **University Smart Infrastructure Authority (USIA)** proposes an **AR-Based Campus Companion System** that overlays navigation instructions and contextual information directly onto real-world views through a smartphone camera.

2 Problem Statement

Design and develop a WebAR-based application that:

- Uses smartphone camera for augmented view
- Detects user location (simulated GPS allowed)
- Displays real-time navigation arrows
- Shows contextual building information
- Operates within browser (no special hardware)

The system must demonstrate markerless AR navigation and contextual overlay.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Functional WebAR interface
- ✓ Directional overlay arrows
- ✓ Destination selection
- ✓ Context information pop-up
- ✓ Simulated navigation logic

Bonus:

Emergency location shortcut feature.

•• ARVR-02

National Council for Technical Education (NCTE-Tech)

Virtual Interactive Engineering Lab Simulation System

1 Background & Organizational Context

The **National Council for Technical Education (NCTE-Tech)** oversees quality standards in engineering colleges across India.

Many institutions, especially in Tier-2 and Tier-3 regions, face challenges such as:

- Limited lab infrastructure
- Insufficient experimental equipment
- Safety risks in physical labs
- Restricted hands-on time
- High student-to-equipment ratio

As a result:

- Students struggle to visualize practical concepts
- Experiments are memorized instead of understood
- Lab sessions become procedural instead of exploratory

To bridge the gap between theory and practical exposure, NCTE-Tech aims to prototype a **Web-based Virtual Engineering Lab Simulation** that:

- Allows students to interact with 3D experiment setups
- Simulates experimental outcomes
- Reinforces conceptual understanding

The hackathon version must focus on 3–4 interactive experiments with basic physics logic.

2 Problem Statement

Design and develop an interactive WebXR-based virtual lab environment that:

- Simulates at least 3 engineering experiments
- Allows user interaction with apparatus
- Demonstrates concept visualization
- Includes quiz-based knowledge validation
- Runs in browser without specialized VR hardware

The system must demonstrate immersion and educational interactivity.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Web-based 3D scene
- ✓ At least 2 working experiments
- ✓ Interactive control sliders
- ✓ Dynamic result calculation
- ✓ Mini quiz module

Bonus:

Multiplayer interaction view.

•• ARVR-03

National Innovation & Startup Council (NISC)

Virtual 3D Collaboration & Innovation Workspace for Hackathons

1 Background & Organizational Context

The **National Innovation & Startup Council (NISC)** promotes:

- Nationwide hackathons
- Virtual innovation challenges
- Hybrid learning programs
- Remote team-based competitions

With the rise of online hackathons and hybrid events, teams face several issues:

- Lack of physical brainstorming spaces

- Poor engagement on video calls
- Limited spatial visualization of ideas
- Fragmented collaboration tools (Docs + Zoom + Whiteboard + Chat)

Current tools are 2D-based and fail to replicate the experience of:

- Standing around a whiteboard
- Moving objects spatially
- Sketching system architecture together
- Physically organizing ideas

NISC aims to prototype a **Web-Based 3D Virtual Collaboration Space** where:

- Team members join as avatars
- Interact in a shared 3D room
- Brainstorm visually
- Manipulate 3D objects
- Simulate real hackathon discussion environment

2 Problem Statement

Design and develop a browser-based multi-user 3D virtual workspace that:

- Allows multiple users to join a shared room
- Represents each user as an avatar
- Supports virtual whiteboard drawing
- Enables object placement & manipulation
- Provides proximity-based audio simulation (optional)

The solution must demonstrate shared spatial collaboration.

3 Minimum Deliverables (12-Hour Scope)

- ✓ Shared 3D space
- ✓ At least 2 user simulation
- ✓ Avatar position sync
- ✓ Working collaborative whiteboard
- ✓ Object placement feature

Bonus:

Proximity-based voice simulation.