

# 1. BIOINFORMATICS

## Idea: AI-Based Disease Gene Predictor

● Problem: Identifying disease-related genes is complex and time-consuming.

● Solution: Build an AI tool that analyzes DNA/RNA sequences to predict disease-causing genes.

● Features:

- Upload gene sequence file
- ML-based prediction
- Risk score output
- Visualization dashboard

## Idea: Drug Discovery Assistant

● Problem: Drug discovery is costly and slow.

● Solution: Use ML to predict drug-protein interaction.

● Features:

- Molecular structure input
- Binding affinity prediction
- Drug ranking

# 2. BLOCKCHAIN

## Idea: Blockchain-Based Medical Record System

● Problem: Health records are insecure and fragmented.

● Solution: Store medical records securely using blockchain.

● Features:

- Patient-controlled access
- Tamper-proof storage
- Smart contracts

## Idea: Anti-Counterfeit Medicine System

● Problem: Fake medicines cause serious health risks.

● Solution: Track medicines using blockchain QR codes.

● Features:

- Scan & verify medicine
- Supply chain tracking
- Manufacturer validation

### 3. INFRASTRUCTURE

#### Idea: Smart Traffic Management System

- Problem: Traffic congestion wastes time and fuel.
- Solution: Use AI + IoT to optimize traffic signals.
- Features:
  - Camera-based vehicle detection
  - Dynamic signal control
  - Real-time dashboard

#### Idea: Structural Health Monitoring System

- Problem: Bridges/buildings may fail without warning.
- Solution: Monitor vibration and cracks using sensors.
- Features:
  - Sensor data analysis
  - Failure prediction
  - Alert system

### 4. HEALTH

#### Idea: AI Health Diagnosis Chatbot

- Problem: Limited access to doctors in rural areas.
- Solution: Chatbot gives preliminary health advice.
- Features:
  - Symptom analysis
  - Risk prediction
  - Hospital locator

#### Idea: Remote Patient Monitoring System

- Problem: Chronic patients need continuous monitoring.
- Solution: IoT-based wearable + app.
- Features:
  - Heart rate, BP tracking
  - Emergency alerts
  - Doctor dashboard

## 5. AGRICULTURE

### Idea: AI Crop Disease Detection System

- Problem: Farmers lose 20-40% of crops to diseases detected too late.

- Solution: Mobile app using computer vision to identify crop diseases from leaf images.

- Features:

- Camera-based disease detection
- Treatment recommendations
- Disease outbreak mapping
- Multilingual support for farmers

### Idea: Smart Irrigation System

- Problem: Water wastage in agriculture due to inefficient irrigation.

- Solution: IoT-based precision irrigation using soil moisture sensors and weather data.

- Features:

- Soil moisture monitoring
- Automated water pump control
- Weather forecast integration
- Water usage analytics

### Idea: Blockchain Farm-to-Consumer Traceability

- Problem: Consumers can't verify organic/quality claims; farmers don't get fair prices.

- Solution: Blockchain platform tracking produce from farm to table.

- Features:

- QR code scanning for product history
- Organic certification verification
- Direct farmer-consumer marketplace
- Transparent pricing

### Idea: AI-Powered Yield Prediction Platform

- Problem: Farmers struggle to predict harvest yields and plan sales.
- Solution: ML model predicting crop yields using satellite imagery, weather, and soil data.
- Features:
  - Satellite image analysis
  - Historical data processing
  - Yield forecasting
  - Market price recommendations

## BONUS: Hybrid Ideas

### Blockchain + Health + Bioinformatics

#### Idea: Secure Genomic Data Sharing Platform

- Patients own their DNA data
- Blockchain for access control
- AI for disease prediction
- Hospitals & labs connect securely

### Agriculture + Blockchain + IoT

#### Idea: Smart AgriChain Platform

- IoT sensors track crop growth conditions
- Blockchain records entire cultivation process
- AI predicts optimal harvest time
- Direct market linkage with verified quality

### Health + Agriculture + AI

#### Idea: Nutrition-to-Farm Optimizer

- Analyzes patient nutritional needs (Health)
- Recommends local crops to grow (Agriculture)
- AI optimizes farm production based on community health data
- Connects farmers with healthcare institutions

## How to Present in Hackathon

- **First Round (5-11 Feb):**
  - Problem Statement
  - Proposed Solution
  - Presentation Video
  
- **Second Round (12-16 Feb):**
  - MVP (Minimum Viable Product)
  
- **Final Round (25 Feb):**
  - Top 5 teams present their project
  - Live demonstration at the institution