

## **AI-Powered Smart Patient Triage Hackathon**

Technology-Driven Innovation in Healthcare using AI & Data

## **Overview**

Healthcare systems worldwide face increasing patient loads, limited medical resources, and inefficiencies in early risk identification. Traditional triage processes rely heavily on manual evaluation, leading to delays in identifying high-risk patients, overcrowded departments, inconsistent prioritization, and increased operational strain.

## **Problem Statement**

Design and develop an AI-based system that analyzes patient symptoms and basic medical history to:

- Classify patients into risk levels (Low / Medium / High)
- Recommend the appropriate medical department
- Provide explainable insights behind predictions
- Support efficient patient prioritization and reduced wait times

## **Scope of the Solution**

The system should include:

- Patient Input Module (Age, Gender, Symptoms, Vitals, Pre-existing conditions)
- Tool should able to load health document as input (EHR or EMR doc)
- AI Risk Classification Engine (ML, Rule-based, or Hybrid)
- Department Recommendation Engine (e.g., General Medicine, Cardiology, Emergency, Neurology)
- Explainability Layer (Contributing factors, confidence score)
- Dashboard Interface (Risk summary, visualizations, department insights)

## **Data Guidelines**

Participants will be provided with a standardized patient metadata schema. Teams must generate synthetic data using a Synthetic Data Vault-like tool or equivalent framework.

## **Sample Metadata Fields**

- Patient\_ID
- Age
- Gender
- Symptoms
- Blood Pressure
- Heart Rate
- Temperature
- Pre-Existing Conditions
- Risk\_Level (optional for training)

## **32-Hour Hackathon Process**

### **Phase 1 Ideation & Architecture**

Understand the problem, define system architecture, plan data generation strategy, select AI approach.

### **Phase 2 Model Development**

Generate synthetic dataset, train and test AI model, build classification engine, implement department mapping.

### **Phase 3 Integration & UI**

Develop dashboard, integrate explainability module, simulate patient scenarios.

### **Phase 4 : Testing & Presentation**

Validate model performance, test edge cases, prepare 5-minute demo and final documentation.

### **Expected Deliverables**

- Working prototype (Web/App)
- Source code repository
- Architecture diagram
- Dataset description and generation approach
- Model performance metrics
- Final presentation (5-minute demo + Q&A)

### **Evaluation Criteria**

Criteria	Weightage
Innovation & Problem Understanding	15%
Technical Implementation	25%
AI Model Performance	20%
Explainability & Transparency	15%
UI/UX & Demonstration	15%
Scalability & Practical Applicability	10%

### **Innovation Bonus Areas ( NO need to share)**

- Real-time triage simulation
- Voice-based symptom input
- Bias & fairness analysis
- Multilingual support

- Integration with wearable device data

### **Outcome & Impact**

Participants will gain hands-on experience in Applied AI in healthcare, synthetic data generation, explainable AI systems, and building scalable prototypes that address real-world healthcare challenges.