**Healthcare – AI-powered tools for rural and public health institutions**

**Problem Statement / Scenario**  
Rural Pakistan lacks diagnostic tools, digitized prescriptions, and predictive health monitoring.

**Commercialization Vision**  
If the winner team solves all the problems in Phase 1 (Online 1 Month), Phase 2 (Techathon Day) and Phase 3 (Incubation + Mentorship only for Winners), what product or service will it actually become at the commercialization stage?

👉 **SehatAI**  
AI-powered rural diagnostic + prescription + epidemic prediction platform, integrated with NADRA e-Health ID.

**Phase-1 (1 Month Online Work) - Sub-Problems**

1. AI for X-ray or image analysis (TB, pneumonia).
2. Prescription digitization and validation system.
3. Risk scoring model for diabetes/heart disease.

**Technical Requirements**

* Train CNN on TB/chest X-ray dataset (open-source like NIH Chest X-rays).
* OCR-based prescription digitization (Urdu + English).
* Risk scoring model using demographic + health survey data.

**Evaluation Criteria**

* Diagnostic accuracy ≥ 85% (30%).
* Prescription OCR accuracy ≥ 80% (25%).
* Risk scoring AUC ≥ 0.8 (25%).
* Code quality & reproducibility (20%).

**Why It’s Relevant (Pakistan-specific)**

* Over 60% of the population depends on public or rural clinics.
* Pakistan's digital health systems lack local AI integration, despite increasing disease burden.
* Enables early detection, reduces referrals, and improves patient outcomes with minimal additional cost.

**🔎 Refined Detailed Explanation (Easy English)**

**The Problem**

In Pakistan, especially in **villages and rural areas**, people don’t have access to good doctors, modern hospitals, or advanced medical tools.

* Many diseases like **TB (tuberculosis), pneumonia, diabetes, and heart disease** are not detected early.
* Prescriptions are usually handwritten, often in Urdu, and hard to read or track.
* Health records are not digital, which makes it difficult for the government and doctors to monitor patients or predict health risks.

This means patients either don’t get the right treatment in time, or they have to travel far to big cities, wasting money and time.

**The Idea (What is SehatAI?)**

SehatAI is an **AI-based health assistant** that helps rural clinics, small hospitals, and even individual patients by:

1. **Detecting diseases using X-rays or images** → For example, using chest X-rays to detect TB or pneumonia automatically.
2. **Digitizing prescriptions** → Converting handwritten Urdu/English prescriptions into digital format, so they can be stored, searched, and validated.
3. **Predicting health risks** → Using health surveys and patient information to calculate risk scores for common diseases like diabetes or heart problems.

In the future, this system can be linked with **NADRA e-Health IDs**, so every citizen has a digital health profile.

**How It Works (Simplified)**

1. **Step 1: Medical Images**
   * Doctors upload a chest X-ray image into the system.
   * The AI model checks for signs of TB or pneumonia.
   * The system shows results in seconds with an accuracy target of **85% or higher**.
2. **Step 2: Prescriptions**
   * Doctor writes a prescription (handwritten in Urdu or English).
   * The AI uses OCR (Optical Character Recognition) to read it.
   * The text is converted into digital format → stored safely in the patient’s record.
3. **Step 3: Risk Scoring**
   * Patient information like age, gender, weight, lifestyle, or survey answers is given.
   * The AI predicts if the patient has a high, medium, or low risk of developing diabetes or heart disease.
   * This helps doctors take action early.

**Why It’s Important**

* **Accessibility:** Helps people in villages who don’t have specialists nearby.
* **Early detection:** Diseases can be caught early before they become dangerous.
* **Digital records:** No more losing paper prescriptions, everything is digital.
* **Affordable:** Uses open-source AI and simple computers, so even small clinics can use it.
* **Pakistan-specific:** Supports **Urdu** prescriptions and focuses on diseases common in Pakistan.

**Where It Will Be Used**

* **Rural health clinics** that lack advanced tools.
* **Public hospitals** to reduce patient load.
* **Government health programs** for disease monitoring.
* **Future integration with NADRA e-Health ID** → each citizen has a digital health profile for doctors to access safely.

👉 In short: **SehatAI = An AI doctor’s assistant for Pakistan’s villages.**  
It can check X-rays, read Urdu prescriptions, and predict health risks, all using open-source AI models on normal computers.