Clinical Decision Drift Detection System (CD³S)

Project Description

Clinical Decision Drift Detection System (CD³S) is a hospital analytics tool that quietly observes how medical decisions are made over time and identifies patterns that gradually change from standard clinical guidelines.

It does **not** diagnose patients.
It does **not** tell doctors what to do.
It does **not** evaluate individual performance.

Instead, it looks at **large groups of cases** and answers questions like:

- Are certain tests being ordered more often than before?

- Has the usual treatment sequence slowly changed?

- Is a department handling similar symptoms differently compared to past months?

- Are these changes gradual and unnoticed?

What Problem It Solves

In real hospitals, clinical practice slowly changes due to:

- Heavy workload

- Staff rotation

- Resource shortages

- Informal shortcuts

- Emergency pressure

These changes are usually **not intentional** and often go unnoticed. Over time, they may lead to inconsistency in care delivery.

CD³S helps hospital leadership see these shifts early — in a neutral, data-driven way.

How It Works (In Simple Terms)

1. The system reads anonymized case records:

   - Symptoms

   - Tests ordered

   - Medicines given

   - Procedures done

   - Final outcome

2. It compares:

   - What usually happens in practice

   - What the official guideline suggests

3. It looks at trends over weeks or months.

4. If it detects a gradual shift, it generates a:
   "Practice Drift Signal"

Not a warning.
 Not an error message.
 Just an observation.

What It Produces

Instead of saying:

❌ "Doctors are not following protocol."

It says:

✅ "A gradual change in diagnostic sequencing has been observed in OPD over the past 90 days."

This encourages:

- Review discussions

- Quality improvement meetings

- Awareness

Without blame.

Why It Is Advanced

Most medical AI systems:

- Try to predict disease

- Suggest treatment

- Automate diagnosis

CD³S does none of that.

It acts as a **Decision Intelligence Layer** — a monitoring system for how decisions evolve inside hospitals.

Who It Helps

- Hospital Administrators

- Department Heads

- Quality & Audit Teams

- Research Committees

In One Line

CD³S is a hospital-wide decision pattern observer that detects slow, unnoticed changes in clinical practice — safely, anonymously, and without judging anyone.