Triage Prediction System

A web-based system designed to assist healthcare professionals in determining the urgency of care for patients based on clinical data using a machine learning model.

* Features

- Predicts patient triage level (Red, Yellow, Green) using vital signs and symptoms

- Gives actionable medical advice based on prediction

- Stores patient triage submissions in a database

- Clean and responsive Bootstrap-based UI

- Built with Flask, Pandas, Joblib, SQLAlchemy

* How It Works

The system uses a pre-trained machine learning model (triage\_model\_with\_encoding.joblib) that was trained on clinical datasets. It predicts the urgency of a patient's condition based on:

- Age

- Heart Rate

- Respiratory Rate

- Temperature

- Blood Pressure

- Oxygen Saturation

- Symptoms

- Pre-existing Conditions

* Model Prediction Logic

Triage Level Description Bootstrap Color |

|--------------|--------------------------------------------------|-----------------|

Red Emergency - Seek care immediately danger

Yellow Urgent - Visit the hospital soon warning

Green Non-urgent - Can wait to visit clinic success

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Tech Stack

- Frontend: HTML, Bootstrap 5

- Backend: Flask

- Model: Trained & saved with joblib

- Database: Flask-SQLAlchemy (e.g., SQLite/MySQL/PostgreSQL)

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* Project Structure

triage-system/

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├── web/

│ ├── \_\_init\_\_.py

│ ├── routes.py

│ ├── forms.py

│ ├── models.py

│ ├── templates/

│ │ └── index.html

│ ├── static/

│ │ └── styles.css

│

├── triage\_model\_with\_encoding.joblib

├── README.md

└── run.py

* Usage Instructions

1. Install Dependencies

bash

pip install flask flask-wtf flask-sqlalchemy pandas joblib

2. Run the App

bash

python run.py

3. Access the App

Visit: http://localhost:5000/

Example Form Fields

Field Input Type

|----------------------|---------------|

Age Integer

Heart Rate Integer

Respiratory Rate Integer

Temperature Float

Blood Pressure String

Oxygen Saturation Integer

Symptom String (Text)

Pre-existing Condition String (Text)

* Data Persistence

Each submission is saved in a database via the Triage model. Fields stored include all inputs and the predicted triage level.

* Testing & Validation

- Unit tests can be added to test form validation, model prediction pipeline, and database inserts.

- Ensure the model file matches the expected input schema.