LiverGuard : AI-Driven IoT System for Liver Disease Detection
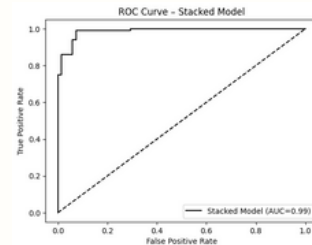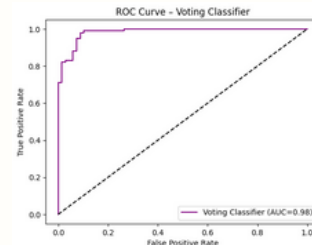
Problem Statement

To design and develop a low-cost, non-invasive, multi-sensor device for early detection and monitoring of liver disease
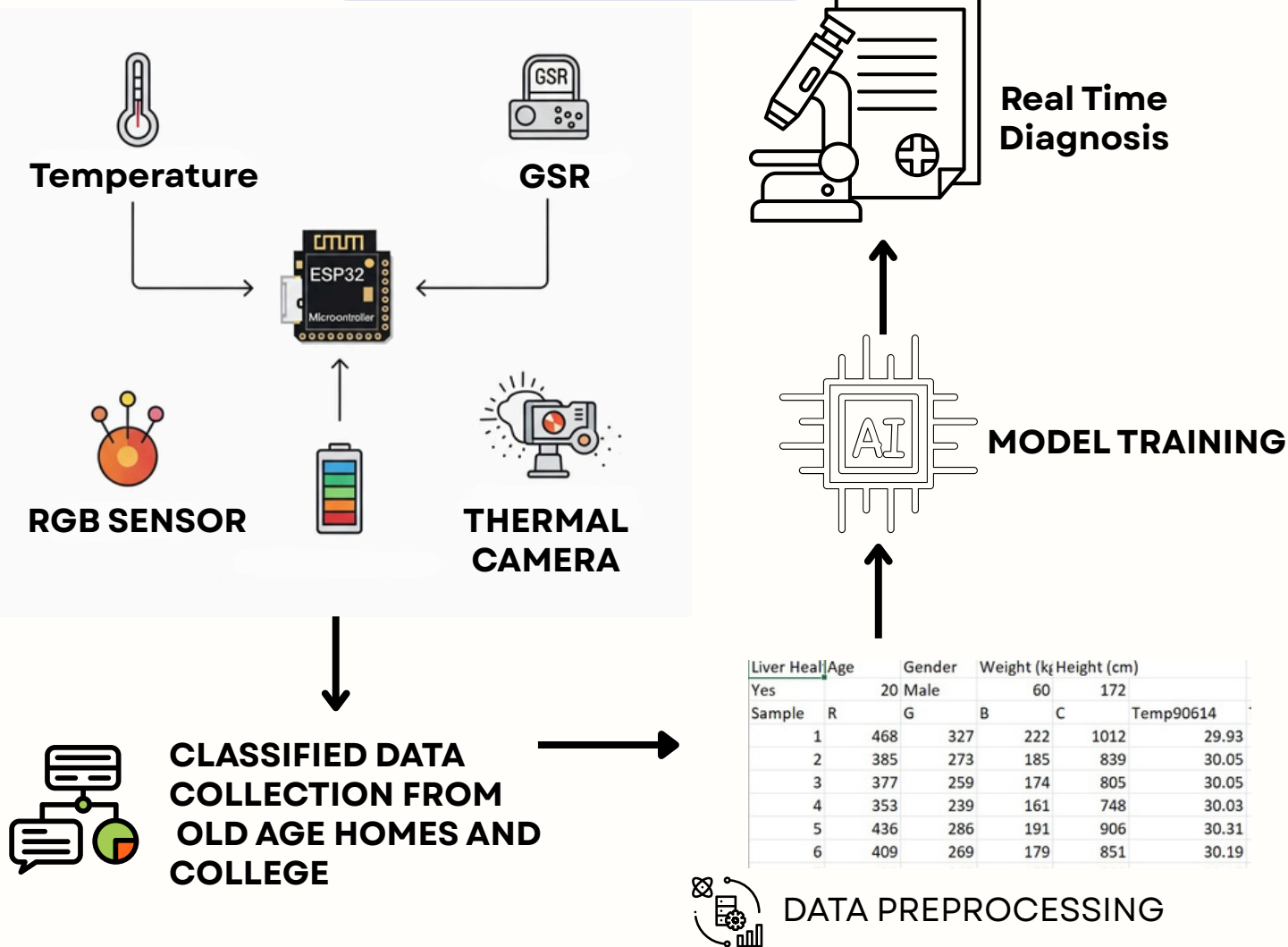
Results

Stacked model:
Accuracy : 95%
AUC score : 0.987

Soft Voted model:
Accuracy : 95%
AUC score : 0.983

Methodology

Temperature

GSR

ESP32 Microcontroller

RGB SENSOR

THERMAL CAMERA

Real Time Diagnosis

MODEL TRAINING

CLASSIFIED DATA COLLECTION FROM OLD AGE HOMES AND COLLEGE

DATA PREPROCESSING

Liver Heal	Age	Gender	Weight (k)	Height (cm)	
Yes	20	Male	60	172	
Sample	R	G	B	C	Temp90614
1	468	327	222	1012	29.93
2	385	273	185	839	30.05
3	377	259	174	805	30.05
4	353	239	161	748	30.03
5	436	286	191	906	30.31
6	409	269	179	851	30.19

Tools and Technology

IDE

ARDUINO

MODELS

1. Random Forest
2. Logistic Regression
3. Support Vector Machine
4. XgBoost
5. CatBoost

LIBRARIES

CatBoost

DMLC XGBoost

pandas

scikit learn

Streamlit

Dataset Collection and Interface Photos

Old- Age Homes and College Campus Data Collection

Interface

ESP32 Sensor Logger
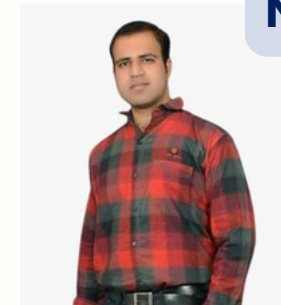
Liver Healthy: Yes Age: 87

129872918   Set Patient Info

Patient info set: Liver Healthy: Yes, Age: 87, Gender: Male, Weig

Start   Stop

Not recording.
Download CSV

Hardware
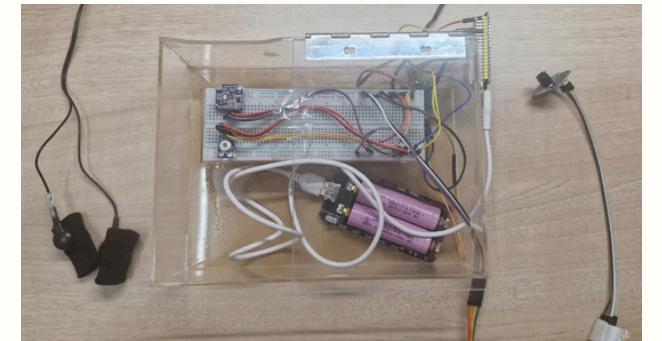
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