Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation: Ministry of AYUSH

PS Code: 1344

Problem Statement Title: Al-based tool for preliminary diagnosis of Dermatological manifestations

Team Name: INNOVISIONERS

Team Leader Name: Kalaiselvan K

Institute Code (AISHE): C-37065

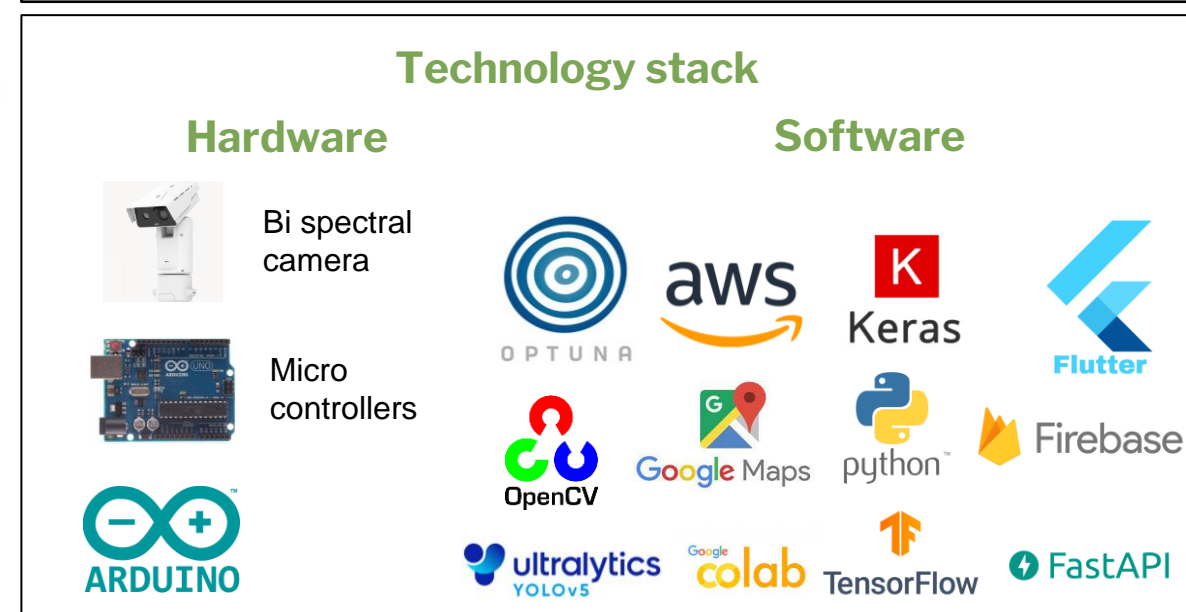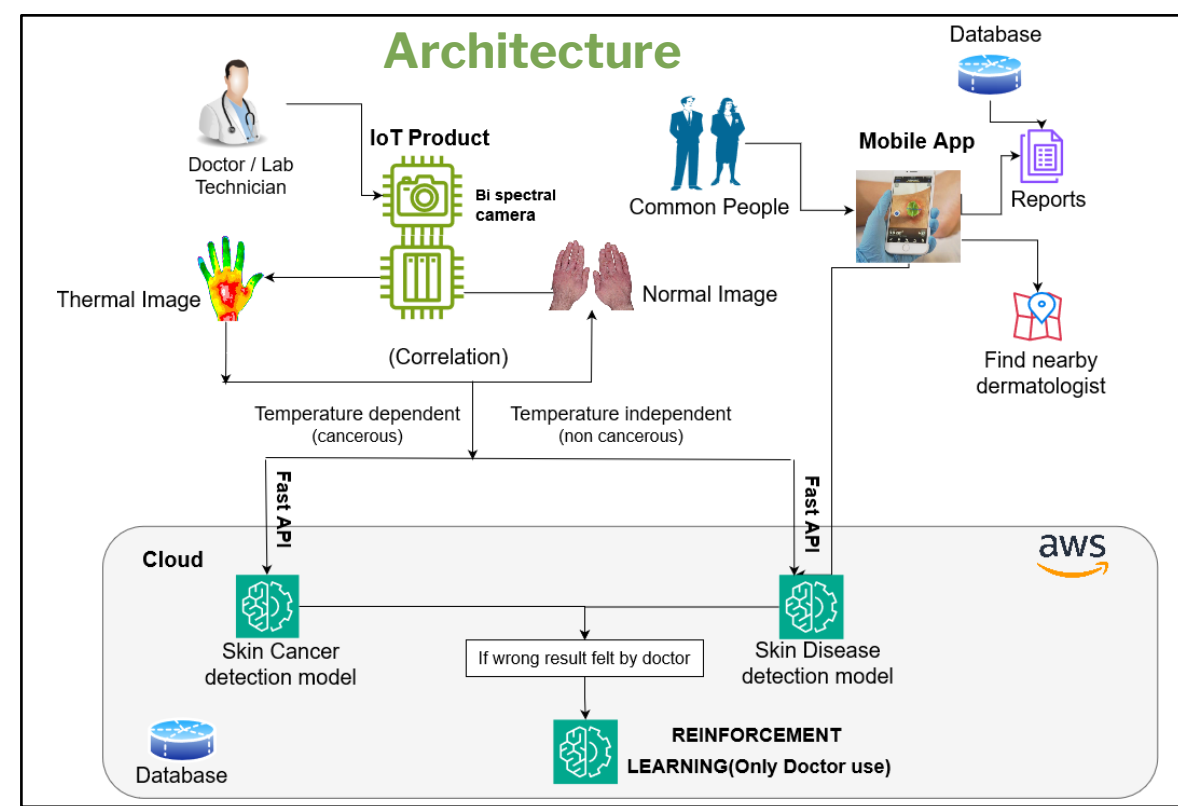Institute Name: Kongu Engineering College

Theme Name: BioTech

Idea/Approach Details

Idea/Solution:

The solution focuses on **deep learning model(CNN)** based skin disease and cancer recognition by making use of **IoT product** for professional usage in hospitals/labs, and mobile application for personal diagnosis.

❖ What truly sets our solution **unique** is its **non-invasive** nature and the ability to differentiate **cancerous** and **non-cancerous diseases** .

❖ Advanced skin cancer detection by **corelating thermal imaging** and normal imaging data taken by **bi spectral** camera, which can detect and **measure the depth** of skin malignancies.

❖ Mobile application focuses on **preliminary diagnosis** and locating the **nearest** dermatologists.

❖ Using of **Reinforcement learning** empowers the diagnosing skin diseases by analyzing images and adjusting their diagnostic strategies over time.

Architecture

Technology stack

Hardware

Bi spectral camera

Micro controllers

ARDUINO

Software

OPTUNA, aws, Keras, Flutter, OpenCV, Google Maps, python, Firebase, ultralytics YOLOv5, Google colab, TensorFlow, FastAPI

Idea/Approach Details

- **Hospitals:** IoT-based products are easily deployable for skin cancer and disease diagnosis.

- **Labs:** IoT-based products are user-friendly tools for conducting *research* in skin diagnoses.

- **Chemical Industry:** Implementing IoT-based solutions for *timely* skin checkups of workers proves to be an efficient means of conducting preliminary diagnoses.

- **Personal use:** a user-friendly mobile app is highly effective for *personal diagnosis*.

CHANNELS: Tele medicine platforms, Health care APIs, Mobile apps.

DEPENDENCIES / SHOW STOPPER:

- **Standalone System:** Our skin diagnosis system functions *autonomously* without relying on external services, relying solely on our *own* models.

- **Version:** Needs minimum Android version 4.0.

- **Network and location:** A reliable network with good bandwidth is essential, along with GPS location features.

- **Cross platform support**: It supports *both* iOS and Android.

- **Privacy:** We *encrypt* the skin images samples for security and privacy.

REVENUE STREAMS: Product based model, Subscription services, Licensing to health care providers.

DEMO VIDEO LINK: https://youtu.be/wkkV49_Z4KQ   **GITHUB LINK: https://github.com/KALAISELVANK-18/Skindiseases_flutter-python.git**

Team Member Details

Team Leader Name: Kalaiselvan K

Branch : B.E   Stream : CSE   Year : III

Team Member 1 Name: Mano Sundar M

Branch : B.E   Stream : CSE   Year : III

Team Member 2 Name: Muthu Karuppan P

Branch : B.E   Stream : CSE   Year : III

Team Member 3 Name: Mohan Raj C M

Branch : B.E   Stream : CSE   Year : III

Team Member 4 Name: Kaviya P

Branch : B.E   Stream : CSE   Year : III

Team Member 5 Name: Kavya P

Branch : B.E   Stream : CSE   Year : III

Team Mentor 1 Name: Dr. S Malliga

Category : Academic   Expertise : ML, Networks, Network Security, Internet of Things   Domain Experience (in years): 28

Team Mentor 2 Name: Mr.S P Abhenavh

Category : Industry   Expertise : Full Stack Developer   Domain Experience (in years): 12