**Checking Urine level, Urine bag Tracking and Urine Analysis using Computer Vision**

1. Sometimes if the urine bag is not placed properly or if the bag is not set properly can lead to Urine Output inaccuracies. Need to check if the Urine bag is placed in right position

Using Computer Vision we can detect the position of the object and if its in the right position. Using some reference coordinates range to check if the urine bag is in right range.

For this experiment, I am using ESP32 camera module interfaced with Arduino and OpenCV python library to track the urine bag in video stream.

A picture containing text, keyboard, computer, indoor

Description automatically generated

Esp32 wifi cam module

Esp32cam has camera as well as wifi interface. We can the stream the video from Esp32cam connected to wi-fi on webserver.

Graphical user interface, website

Description automatically generated

Video streaming on web server

Focusing the camera on Glass object for example

A hand holding a plastic cup

Description automatically generated with low confidence

Now Optimze the RGB components to focus only on glass object using image mask

Graphical user interface, website

Description automatically generated

Now tracking can be done as seen using blue rectangle

Graphical user interface, application

Description automatically generated

1. We can also do the urine level measurements and tracking using Computer vision or Artificial neural networks as shown in image below by using image masks for training in machine learning models

Diagram, engineering drawing

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1. We can also do Urinalysis based on colour using Convolutional Neural network concepts of computer vision

Diagram

Description automatically generated