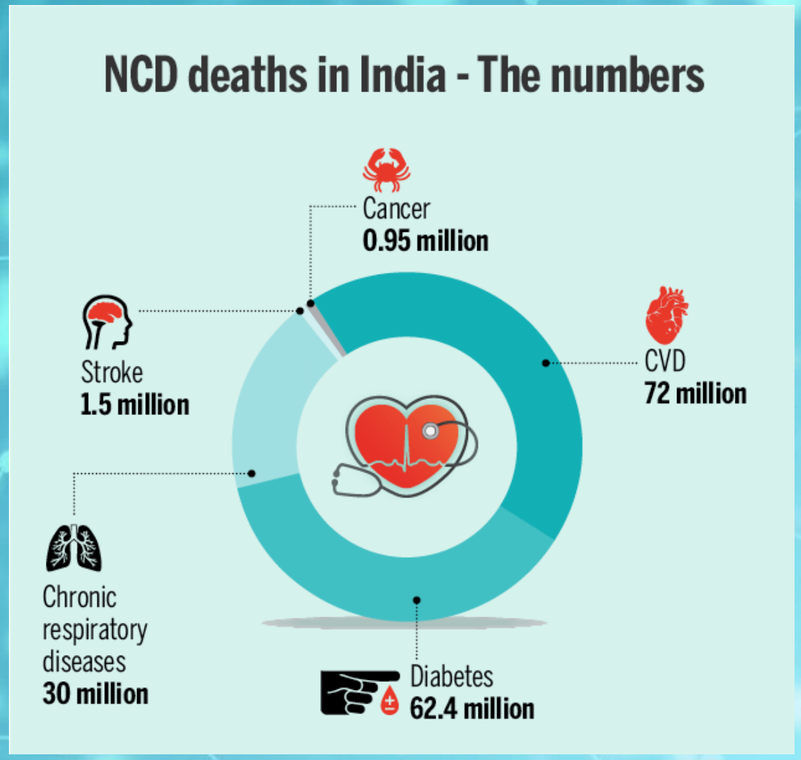
URO 2

UNP
LUG
GED

PURPOSE OF THIS WORK

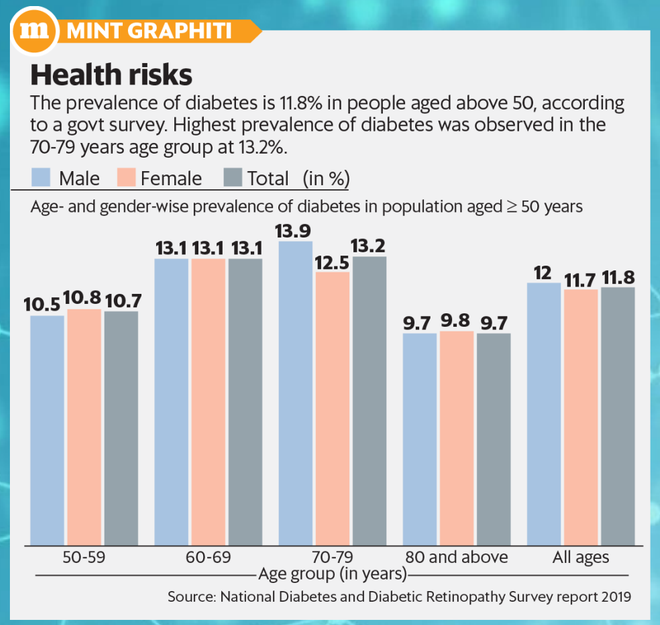
Good health is central to human happiness and well-being that contributes significantly to prosperity and wealth and even economic progress, as healthy populations are more productive, save more and live longer.

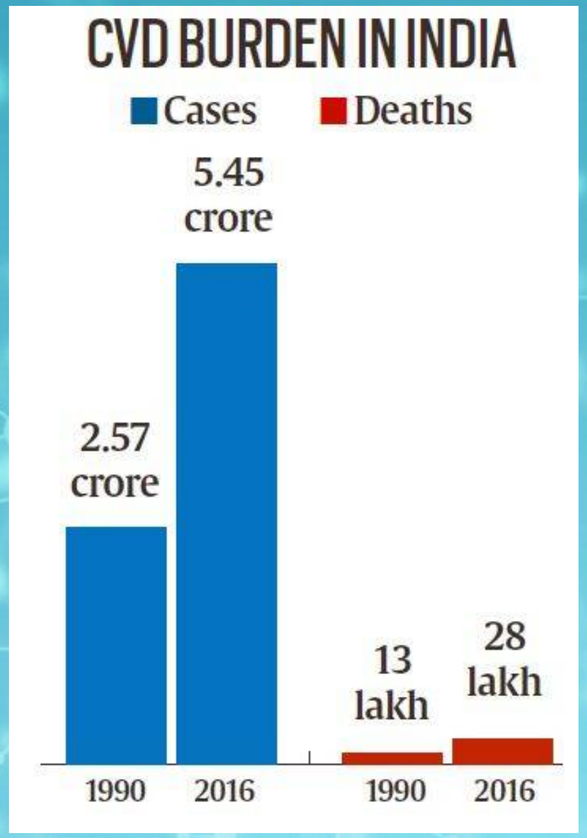
Though India's healthcare sector is one of the fastest-growing globally, lack of availability is still a significant concern for the country's huge population. Apart from accessibility, the cost is a substantial deterrent to addressing health issues, both timely and quality care.



Even though being the country with the second-largest population, India has a lot of lengths to go in terms of bridging the gap between healthcare and technology.

While India might be a third world country based on socio-economic development parameters, in terms of our lifestyle and health, we have the same morbidity profile of a first-world nation. Due to this lifestyle diseases like cardiovascular, diabetes, hypertension, asthma and respiratory as well as cancers are on the rise.





The impact that technology would have in the healthcare field is immeasurable. By using the right tools, innovating and inventing, many healthcare problems that India faces today can be solved.

DA VINCI ROBOT

PROBLEMS FACED

Extensive testing of many urine samples at hospitals becomes tedious and is prone to human errors.

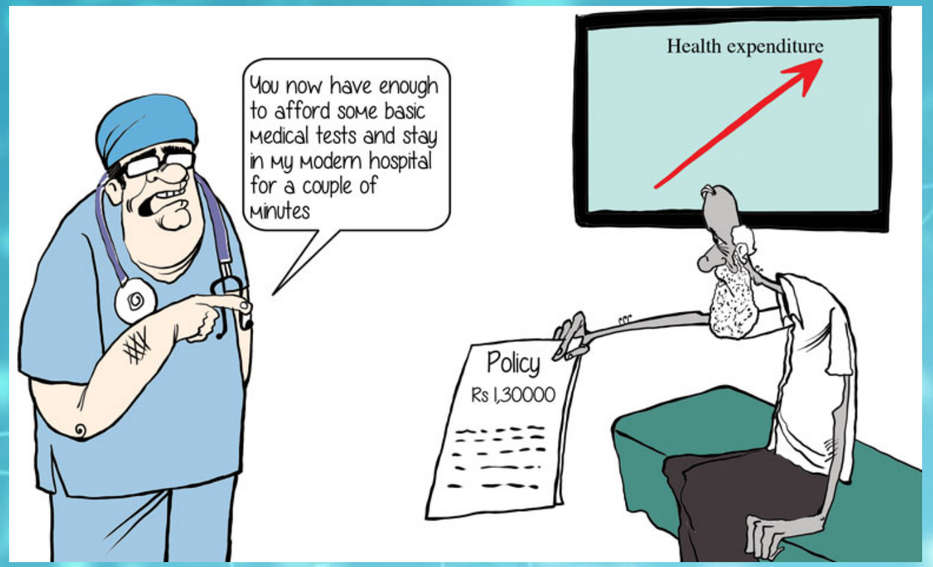
Lack of methods available to the public for accurately analysing urine samples.

Non-suitability of urine dipstick test for colour blind people as the test involves colour changes.

The inconvenience caused to patients in continually collecting samples and reporting in hospitals frequently.

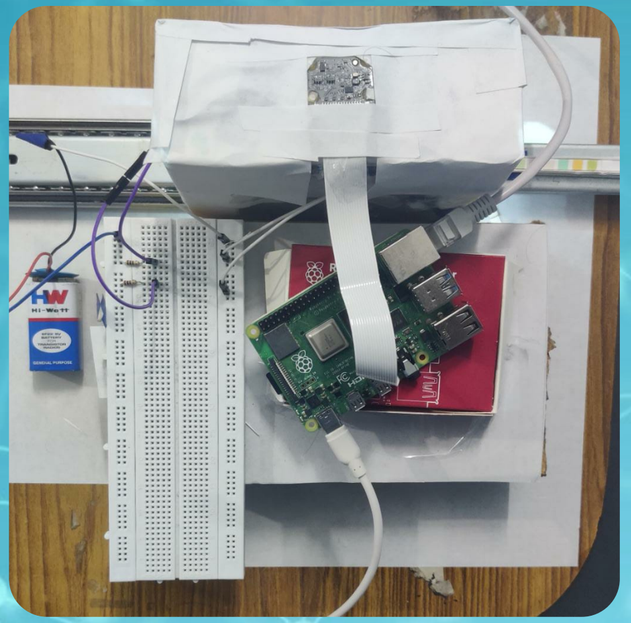
Lack of facilities available to monitor urine tests from home and send them to the doctor automatically

current urinalysis machines cost's around Rs 50,000, which make them unaffordable for the commoner.



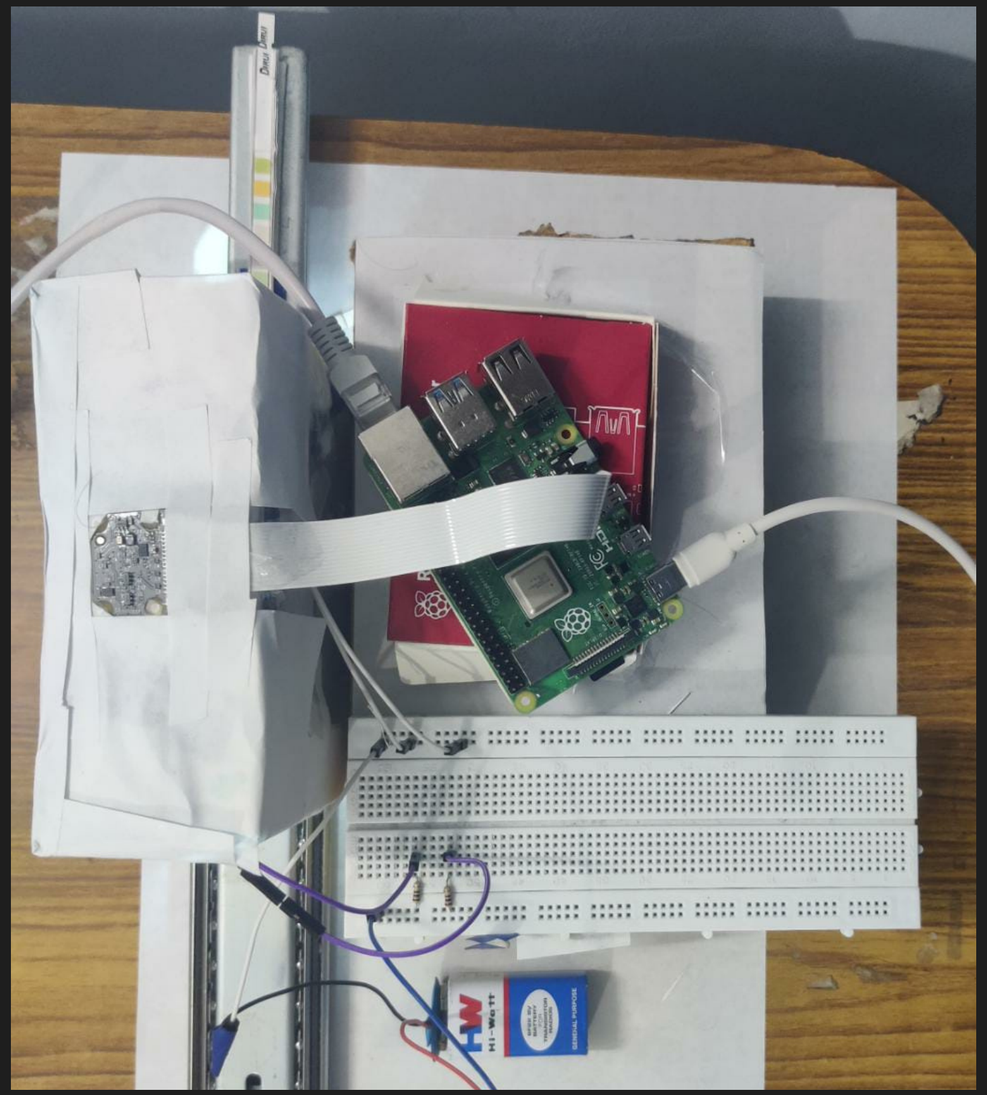
INTRODUCTION

URO 2 is a smart device that is capable of testing and analysing urine for different parameters like leukocytes, protein, pH, specific gravity, Ketones and glucose .



SOLUTION

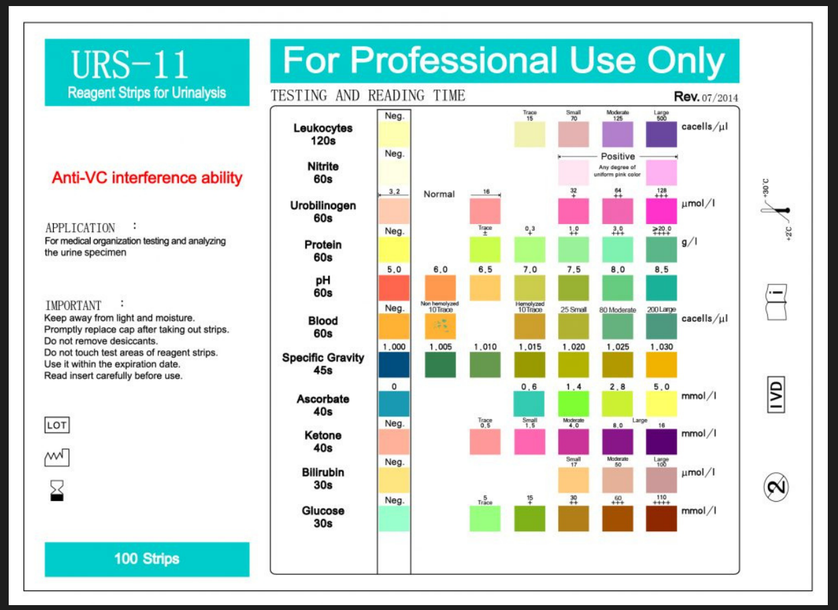
- RASPBERRY PI 3 MODEL B
- RASPBERRY PI CAMERA V2
- URINE DIPSTICKS
- FRAME OF TESTING CHAMBER



RASPBERRY PI WITH CAMERA

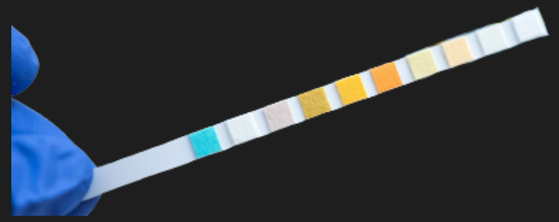
PROCESS INVOLVED

Urine dipstick is exposed to urine collected in a beaker by dipping in it



After a specific amount of time, reaction occurs and colour at each pad on the dipstick change. This is cross verified using standard colour ranges set by the manufacturer

user collects urine in a beaker and dips the dipstick inside it



This is then placed inside the testing chamber, which consist of raspberry pi, camera

LOGIC

The data collected is analyzed by raspberry pi using a custom python script

Raspberry pi then sends the test results to the registered email id's

python

Take an image of the dipstick inside the test chamber after 60 seconds from inserting

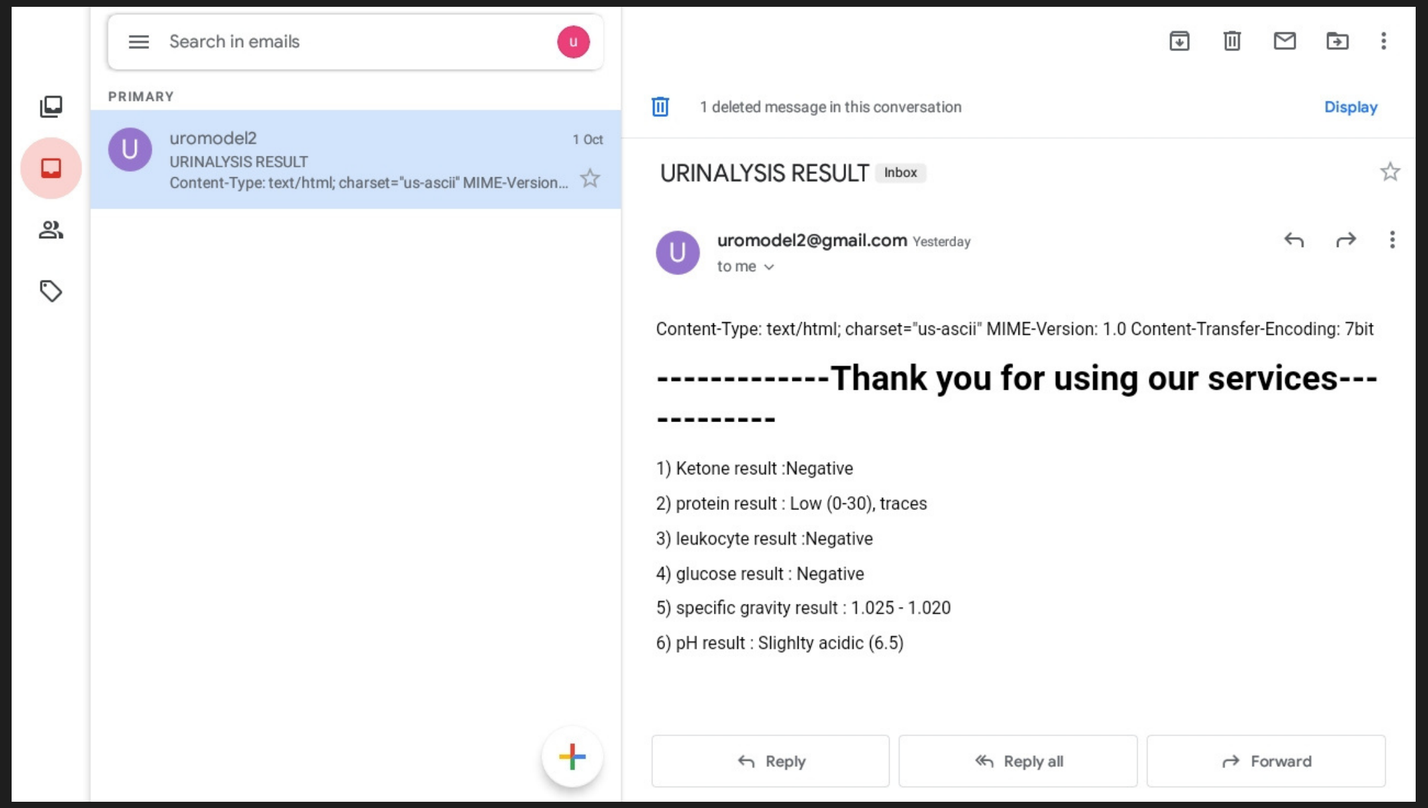
convert the colour space into HSV colour space

Get HSV values of the colours

Compare with standard values given by the manufacturer

Send the result to registered user's email

SAMPLE RESULT



Result is send through email

APPLICATIONS

- The user can analyse his sample at home easily
- Doctors and other health care workers can track the patient's sample continually
- Placing this device in hospital rooms make it easy for doctors
- Continuous tracking of glucose level in urine for diabetes patients
- Early detection of diseases like diabetes, kidney stone and other infections in the kidney.
- This helps a colour-blind person analyse his urine sample without the help of another person.

FURTHER DEVELOPMENTS

- Using machine learning algorithms to analyze urine samples
- Continuous tracking of glucose levels using the collected data and providing the user with the right diet.

THANK YOU