

## **Introduction:**

Health is the most priceless treasure and should be treated as such. And it was only a matter of time until the field of computer science and engineering turned towards taking care of oneself easier with the help of latest technology. Our project is about detecting illness through noninvasive techniques. A medical procedure is defined as non-invasive when no break in the skin is created and there is no contact with the mucosa, or skin break, or internal body cavity beyond a natural or artificial body orifice, greatly reducing discomfort to the patient and the doctor.

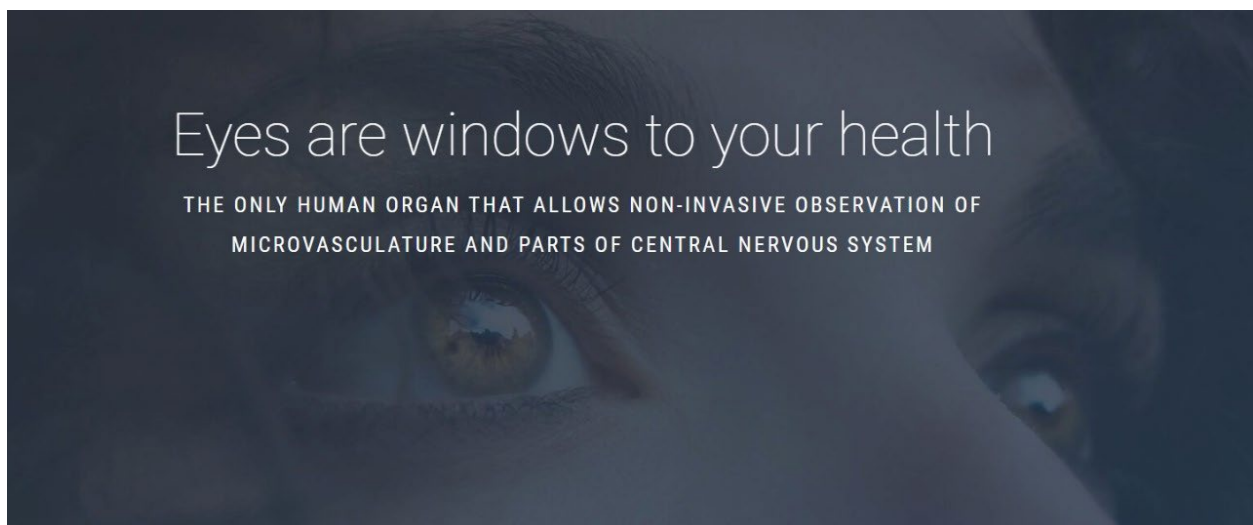
## **Abstract:**

Worldwide, there are at least 230 million invasive procedures performed annually and most of us will undergo several in our lifetime. But it causes patients to lose time and money and may cause mental distress, physical harm, or death (there were references of articles here of american doctors).

Then came the minimally invasive approach to medicine, surgery and healthcare. The minimally invasive approach has revolutionized surgical care, significantly reducing postoperative pain, recovery time, and hospital stays with marked improvements in cosmetic outcome and overall cost-effectiveness.

But now, completely noninvasive techniques are taking over. Detecting or keeping record of an illness using noninvasive sensors, scanners and external splints. So, we aim to tackle the illness which have had the most interest over time in Pakistan, by detecting them and more using completely noninvasive techniques.

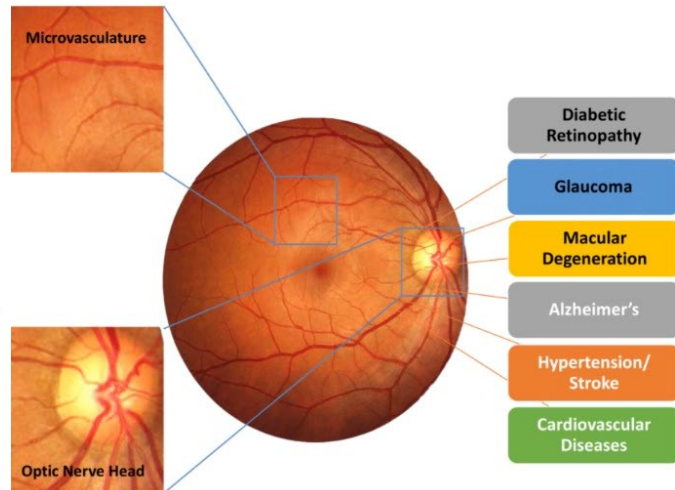
## **Experimental Setup:**



We plan on detecting diabetes, glaucoma, cardiovascular diseases and several nervous diseases like Alzheimer and hypertension by scanning a high quality eye picture and using machine learning to train our model to scan the picture and analyze the condition of retina, eye veins and optic nerve head with comparison to other 1000 pictures it has worked with and provide us with an accurate result. A painless, fast and cheap solution for detecting a sickness which is done by the old way -> blood test.

## Retinal Photographs

Photographs of the retina, the vision sensitive region at the back of the eye, can help doctors see both the microvasculature and the optic nerve head in detail allowing them to make a diagnosis of not only vision threatening eye disorders such as **diabetic retinopathy (DR)**, **age-related macular degeneration (AMD)**, and **glaucoma**, but also of life threatening systemic disorders like risk for **hypertension, stroke, cardiovascular diseases**, and neurological disorders like **mild cognitive impairment (MCI)** and even **Alzheimer's disease**.



### Materials required:

Magnifying glass

PVC pipe

Glue

Cardboard

Smart phone camera (convenient)

Tape

Sandpaper

Spray and polish (presentation)

Bolts (maybe)



### Setup:

I don't think I will have to write this at all? So,

### Final Product:



(Those are nice bed sheet patterns.)







**Software:**

For easy use, we plan to develop a portal through where anyone can click a photo of their eyes and check.

Cloud computing

Machine learning and model training for detection of the disease. Using Microsoft Azure for data acquisition, computer vision and model training

Additional features comprise of the health bot and diet plan.

**Conclusion:**