

## **FINAL OUTPUTS OF THE APPLICATION**

**Project: Detection of Parkinson's Disease using Machine Learning**

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- **Parkinson's disease is a brain disorder that causes unintended or uncontrollable movements, such as shaking, stiffness, and difficulty with balance and coordination.**
- **Symptoms usually begin gradually and worsen over time. As the disease progresses, people may have difficulty walking and talking. They may also have mental and behavioral changes, sleep problems, depression, memory difficulties, and fatigue.**
- **While virtually anyone could be at risk for developing Parkinson's, some research studies suggest this disease affects more men than women. It's unclear why, but studies are underway to understand factors that may increase a person's risk. One clear risk is age: Although most people with Parkinson's first develop the disease after age 60, about 5% to 10% experience onset before the age of 50. Earlyonset**

**forms of Parkinson's are often, but not always, inherited, and some forms have been linked to specific gene mutations.**

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Parkinson disease (PD) is a progressive neurodegenerative disorder that impacts more than 6 million people around the world. Parkinson's disease is non-communicable, early-stage detection of Parkinson's can prevent further damages in humans suffering from it. However, Nonetheless, non-specialist physicians still do not have a definitive test for PD, similarly in the early stage of the diseased person where the signs may be intermittent and badly characterized. It resulted in a high rate of misdiagnosis (up to 25% among non-specialists) and many years before treatment, patients can have the disorder. A more accurate, unbiased means of early detection is required, preferably one that individuals can use in their home setting. However, it has been observed that PD's presence in a human is related to its hand-writing as well as hand-drawn subjects. From that perspective, several techniques have been proposed by researchers to detect Parkinson's disease from hand-drawn images of suspected people. But the previous methods have their constraints.

### PARKINSON'S DISEASE

A disease that affects nerve cells in the brain and causes tremors, poor coordination, and problems walking and moving.

#### CAUSES & RISK FACTORS

Both sexes & all races are affected

Parkinsons commonly develops after age 50

Scientists have identified abnormal genes that may lead to parkinsons in some people, but there is no solid proof to show it is always inherited

Men are more likely to develop parkinsons disease because they're more likely to experience long periods of stress or exposure to toxins

### Symptoms of PARKINSON'S

- Slow thinking
- No facial expression
- Drooling
- Difficulty swallowing
- Shaking tremors
- Loss of small or fine hand movements
- Memory loss, dementia
- Anxiety, depression
- Hallucinations
- Shopped posture
- Aches and pains
- Constipation
- Problems with bladder

### Parkinson's Disease Symptoms

Labels: Slumped posture, Masked Face, Back rigidity, Forward tilt of trunk, Flexed elbows and wrists, Reduced arm swing, Hand tremor, Tremors in the legs, Slightly flexed hip and knees, Shuffling, short stepped gait.

### Stages of Parkinson's Disease

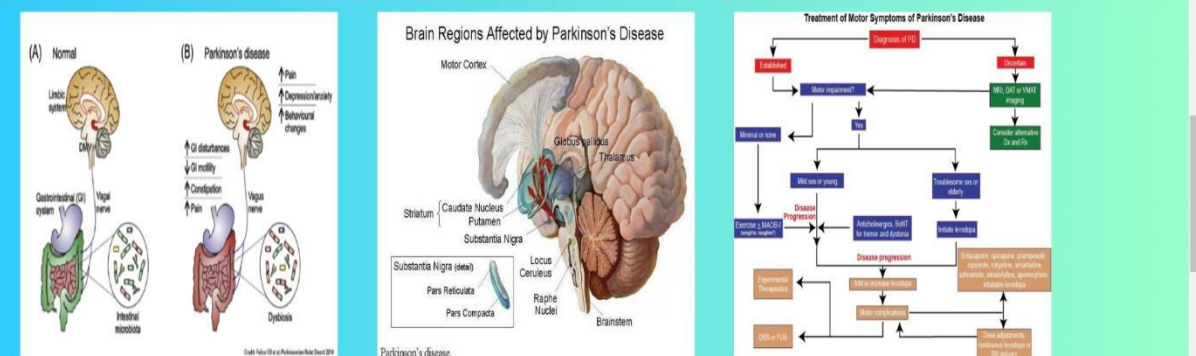
Stage 1: Develop mild symptoms but able to go about day-to-day life

Stage 2: Symptoms such as tremors and stiffness begin to worsen, may develop poor posture or have trouble walking

Stage 3: Movement begins to slow down, loss of balance

Stage 4: Symptoms are severe and cause significant issues with day-to-day living, unable to live

Stage 5: Walking or standing may be impossible at this point, people at this stage are often confined to bed



HomePage x +  
127.0.0.1:5000/home

Home Predict-Results

## Treatment for parkinson disease

## How brains looks during PD?

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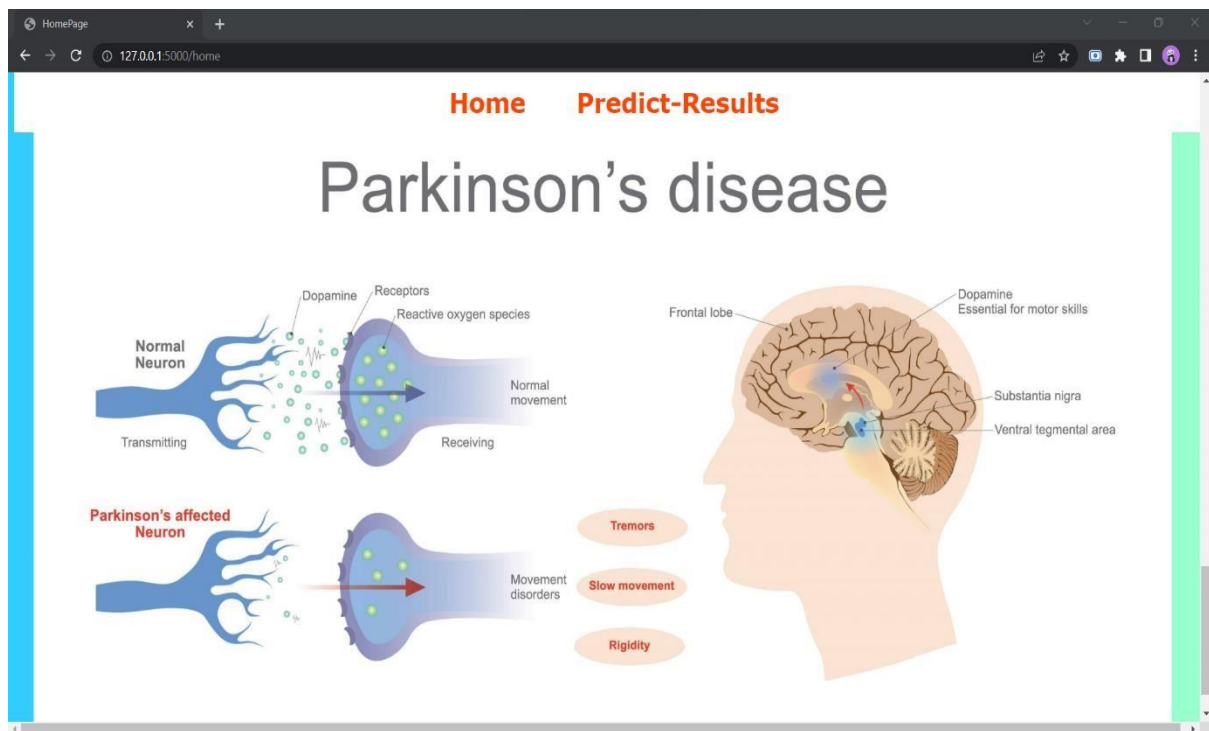
Home Predict-Results

## How brains looks during PD?

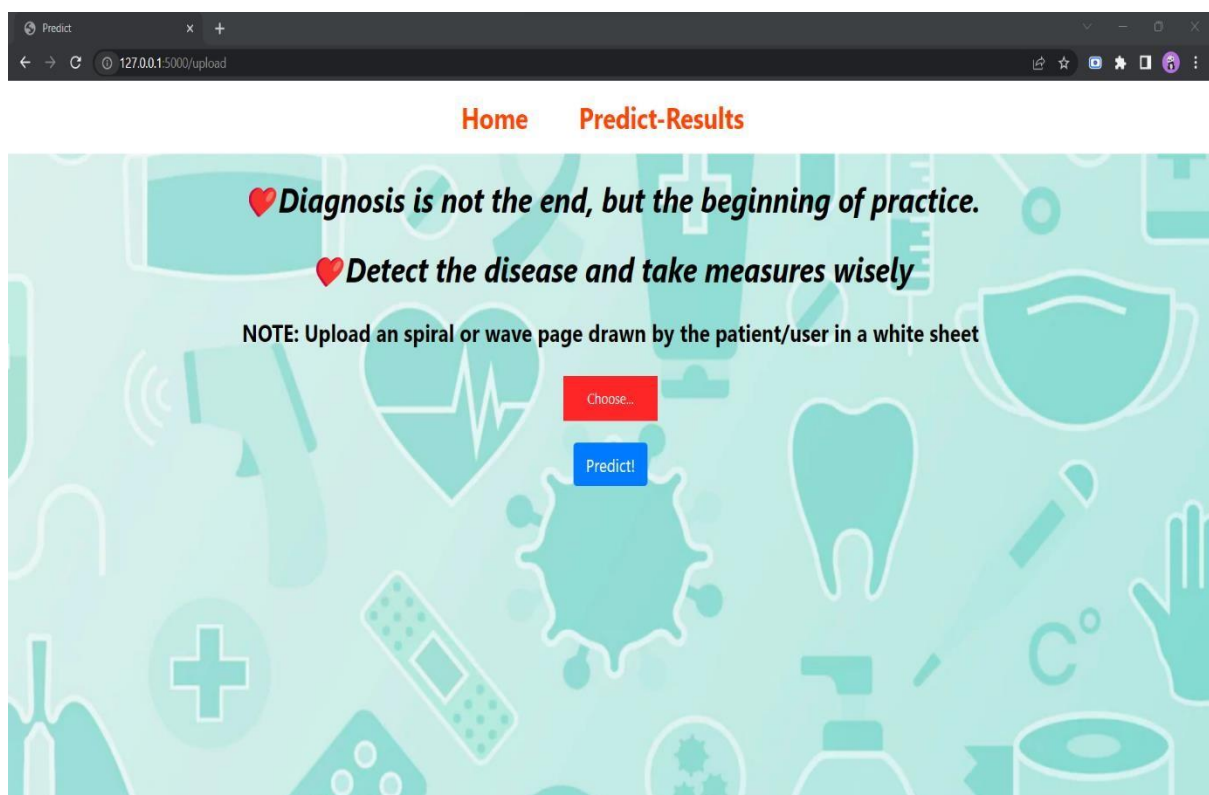
Healthy

Parkinson's Disease before symptoms

Parkinson's Disease after symptoms

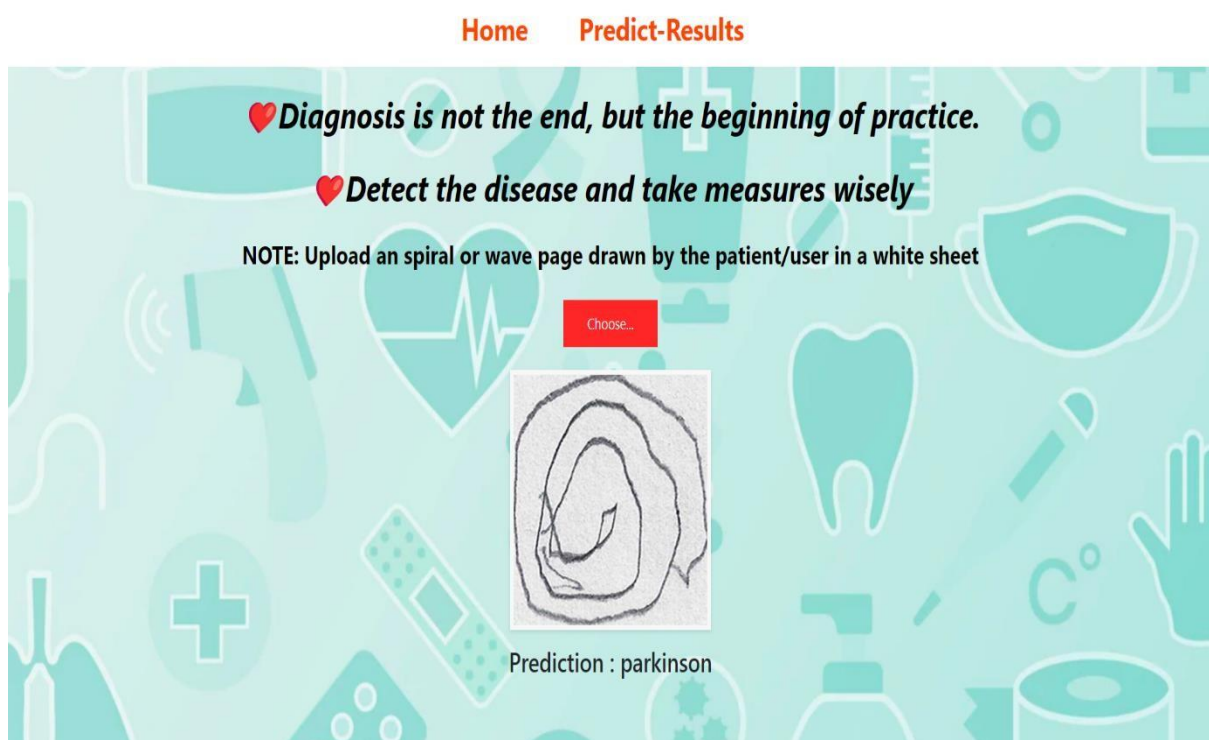
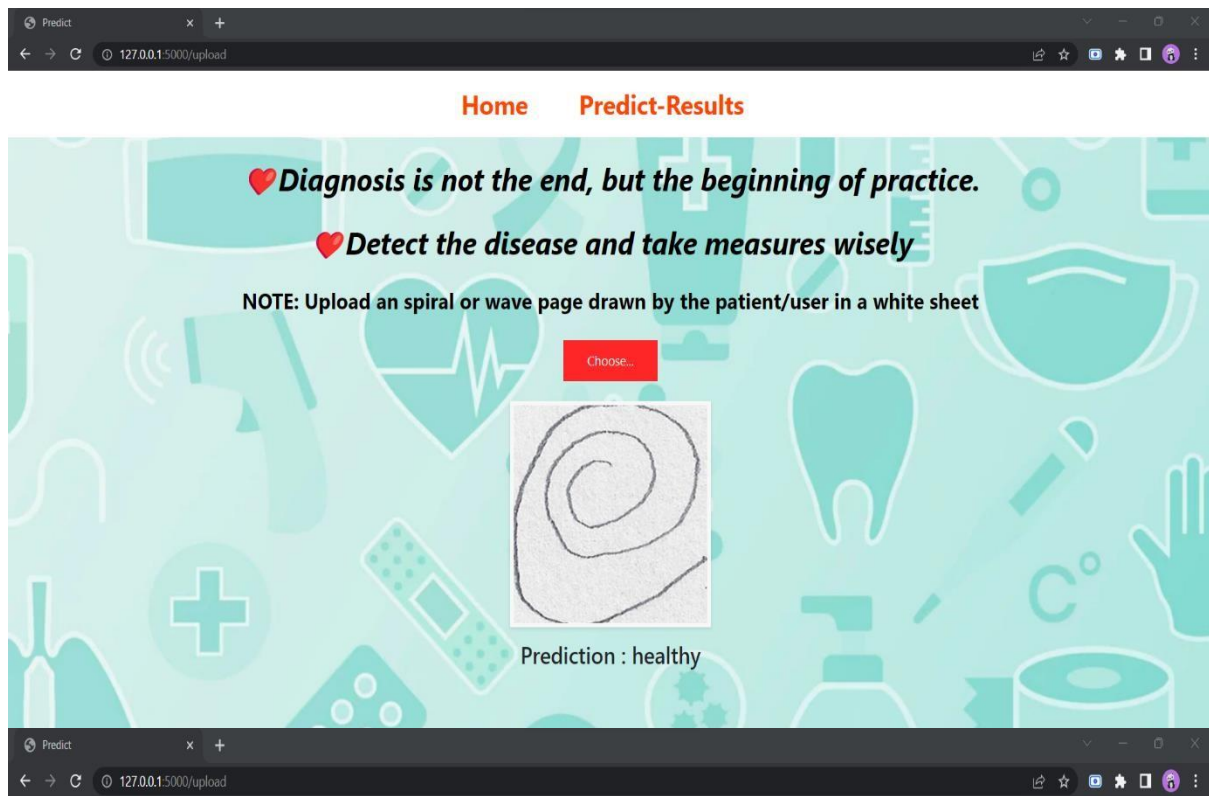


## TEST-VITAL PAGE:





## PREDICTED RESULT OF SPIRAL/WAVE IMAGES:

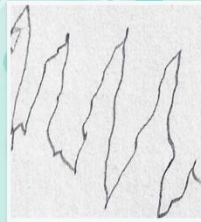


♥ *Diagnosis is not the end, but the beginning of practice.*

♥ *Detect the disease and take measures wisely*

NOTE: Upload an spiral or wave page drawn by the patient/user in a white sheet

Choose...



Prediction : parkinson