

## This spoon designed by IIT Gandhinagar students can help Parkinson's patients by reducing food spillage

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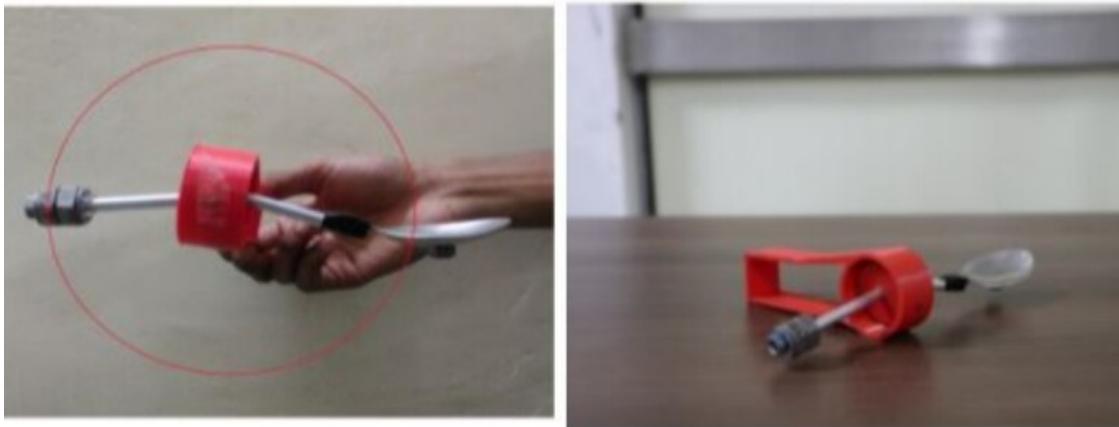
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# This spoon designed by IIT Gandhinagar students can help Parkinson's patients by reducing food spillage

**The spoon designed by the students at IIT Gandhinagar aims to reduce the effect of pill roll tremors by using a gimbals' mechanism.**

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Neutra Spoon aims to reduce the issue of food spillage due to tremors.

In order to provide assistance to patients suffering from the most common movement disorder, Parkinson's disease, a group of students from the Indian Institute of Technology (IIT), Gandhinagar, have developed a special kind of spoon, named as Neutra Spoon, to reduce the issue of food spillage due to tremors. The students have won a gold prize for the same design in the BETiC Medical Innovation Challenge at the seventh Inter IIT Tech Meet for solving the problem statement.

## **What is Parkinson's disease?**



A tremor in hands, arms, legs, jaw and face is one of the primary symptoms of Parkinson's disease.

According to Parkinson's Disease Foundation, Parkinson's disease is a chronic movement disorder caused by deteriorating motor senses where symptoms continue and worsen over time. The central nervous system of a person is affected by the disease where the neurons cannot transmit information among themselves, resulting in rigid and slow or even absence of physical movement.

## **Students who developed the design:**



Team members and students of IIT Gandhinagar who developed the design of Neutra Spoon.

The design of Neutra Spoon has been developed by the team of seven students of IIT Gandhinagar.

The team members include Shireesh Raghunath Shelke (B Tech in Mechanical Engineering, 2nd year), Vedanta Krishna Bhutani (BTech in Electrical Engineering, 2nd year), Saurabh Kartik Muneshwar (BTech in Mechanical Engineering, 2nd year), Ankur Vaibhav (BTech in Chemical Engineering, 2nd year), Akshay Biju (BTech in Electrical Engineering, 2nd year), Janvi Thakkar (BTech in Material Science and Engineering, 1st year) and Maitreya Thakur (BTech in Material Science and Engineering, 1st year).

## Here is all you need to know about the Neutra Spoon:

**Cost of Spoon:** The cost of the spoon was reduced by making the spoon fully passive while not compromising with its efficiency to a great extent.

**Working of Spoon:** The spoon aims to reduce the effect of pill roll tremors by using a gimbals' mechanism.

*"For the efficient working of the spoon, the proper amount of counterweight required was figured out. Then, the spoon was also given a slight bend of 20 degrees to make it more stabilized. The orientation of the handle was an important factor and was found out by trial and error method. For each step, we had made a vibrating apparatus to check for improvements, based on their efficiency in relation to a normal spoon," said Shireesh Raghunath Shelke, a BTech 2nd year student at IIT Gandhinagar.*

"We also had to include some novel feature - which was the geometric constraint. Due to this constraint, one could also slice food items like ice-cream and sweets using the spoon itself," Shelke added.



### Challenges faced:

*Talking about the challenges faced while developing the design of the Neutra Spoon, Akshay Biju, a BTech 2nd year student said, "Making an apparatus to measure the efficiency required tuning multiple servo motors to vibrate the spoon at a particular amplitude and frequency. Making the spoon as light as possible was also a challenge. We also had to ensure that while the orientation of the handle makes the spoon more efficient, it should not inhibit a person's natural style of eating."*

"This was of utmost importance as our goal was to make sure that people diagnosed with Parkinson's are able to eat in public or with their families, just like any normal person would," Biju added.

## What's next?



Since the design has been approved by the jury, the entire team of developers is all set to test it on patients suffering from the Parkinson's disease in order to get a clear idea about the efficiency of Neutra Spoon.

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