**Title of Innovation : Innovetive Utility Stick For Parkinson’s Patients**

1. **Details of the Nominee**
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**MY INNOVATION:** I had been constantly observing my grandmother suffer from anxiety, stress and an unstable gait. She is a patient of **Parkinson’s disease** and is unable to walk comfortably. Devices that were available in the market could not give her the requisite and specific help that she needed to assist her in walking. In consultation with Dr. Sumit Singh, Neurologist at Medanta Hospital(at present at Artemis Hospital), Gurgaon, I understood the gravity of the problem and tried to work out a beautiful yet scientific solution. The Doctor had wishfully suggested the creation of a hurdle in front of foot as she walked. This would assist her brain to programme her walking more effectively. Parkinson’s disease is a chronic and progressive movement disorder and the symptoms continue and worsen over a period of time. Patients of this disease become unstable while they walk, making it a very risky proposition.

Due to decreased production in the amount of ‘Dopamine’, (a chemical acting as a messenger produced by the nerve cells), the patient is unable to control body movements resulting in an unstable gait. An otherwise slow walk may turn into quick short steps, taken at a faster pace within seconds. This may lead to the patient falling down and getting injured. Tremors of the hand, arm, legs, jaw and face, coupled with slowness and freezing movements or rigidity and stiffness of limbs and trunk are some of the symptoms very often seen among patients. Since these are generally people with advancing age, day to day routine becomes very challenging.

 **‘Necessity is the mother of all invention’**

 I thought through the problem and started concretizing many ideas. I thought of things like focusing a light ray on the walking surface to create an illusion of a hurdle which would be effective, at the same time safe for my grandmother. Over a period of time I decided to fit an LED plate and a laser light onto a normal walking stick which my grandmother was already using. My grandmother who found it difficult to even take the first step straight can now do so with ease and comfort. With the illusion created by this, the patient treats it as an obstacle towards which foot moves more easily and starts moving. The first step taken with stability ensures the safety of the individual.

This led to the creation of a **'Laser Stick'.**

Since it worked as an excellent device which served the purpose so well, I also enhanced it further by adding more features like a **torch** and **charging facility**. It is now a fully functional supportive device ready to serve many others. It is the first of its kind in India and abroad making it even more special.
**Journey Of Utility Stick-**

**How I got the idea-** After check up of my Grand mother, Smt. Sushma Agrawal (Parkinson's patient), Dr Sumit Singh (Neurologist at Medanta Hospital, Gurgaon, now in ARMETIS) had suggested that things like light ray on surface or any illusion which create a hurdle in front of foot could help her in walking. My father searched a lot in the market but didn’t find any product which contain ray or can produce any illusion. He discussed with me about this requirement.Then I got this idea to fit Laser light in stick itself which produce a horizontal line on surface. This stick had changed my mother's life. When Dr Sumit has seen the stick, he appreciated a lot and told me to file a patent. It will be boon to Parkinson's patients as it is growing disease and there is no such type of product available in the market.

**It is a new, practical and creative technological solutions for everyday problems and problems that have been there for long.**
 **How I went about it-** As my father discussed about the requirement, firstly I have fitted LED light in a way that made a horizontal line on surface. When my Grandmother used the stick she found very useful. Later I searched internet and imported a laser light and fitted in stick. Now this laser is more visible in day light also. Now my Grandmother can walk her own without the support of any person. This effort was highly appreciated by Dr Sumit Singh. So after his motivation I have added more features like torch and charging facility and ready to serve other Parkinson's patients. It is first of its kind in India and abroad.
 **Materials used-** I have converted basic walking stick into a utility stick. Materials used in stick are basic walking stick, laser light, led light for torch, chargeable battery, switch, wires, indicator and battery support box.

**Who helped me-** Initially I had connected laser light and completed all wires and switch. Later my uncle Mr Ram Tiwari helped me to improve the look and connected torch and chargeable battery for continuous smooth laser and LED light.

**How to procure it –**My Grandmother was already using simple stick. I have imported laser light through online shopping and other material from local market. I made all the changes in basic stick at home.

**How it is useful-** Parkinson's patient feel difficulty in moving first step straight, but can use stairs and can cross obstacles easily. So when a laser light comes in front of patient, it feels like an obstacle and he/she moves the foot and starts moving. This innovation will make many of Parkinson's patient’s life easy. It is a technological improvement in existing ones that can make life and work easier.

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| **MYSELF:** I am a 14 year old boy studying in class IX in Apeejay School, Noida. I am ery keen on reading books on science, investigating about space. I love listening to pop music in my leisure time. I enjoy watching You Tube videos on subjects of my choice. I enjoy working hands on for various areas of my interest – making new and innovative things using waste material, robotics, mobile applications innovations or improvisations on the already existing ones, reading about the latest happenings in the scientific world through internet, etc. I love reading about quantum physics, space geometry and space time, etc.I have received Dr APJ Abdul Kalam Ignite award on 7th November. 2016 from Honourable President of India Shri Pranab Mukherjee for my this Innovation.Dr. APJ Abdul Kalam IGNITE 2016 Competition is a national competition of original technological ideas and innovations by children up to Class XII - is organised by NIF every year to promote creativity & originality among children. It is an effort to focus primarily on the creativity of the children and promote inclusive & compassionate thinking among them.This year, a total of 32 students will be awarded for their ideas/innovations. Overall, 55,089 submissions from 458 districts of all the states and union territories of India were received during the IGNITE 16 Competition, which ran from September 1, 2015 to August 31, 2016. |

Receiving the honour and that too from none other than the President of India was surely a dream come true. I walked with pride as I fondly remembered the source of my inspiration - the missile man himself - our respected late President Dr. APJ Abdul Kalam in whose memory this programme has been initiated.

I was very delighted and on top of the world as my innovation had been acknowledged. I felt grateful towards everyone who was and is associated with me in my endeavour.

My aim in life is to become a ‘Scientist with a Difference’ - a scientist who not only make innovations but creates devices which can help people in their day-to-day activities.

Profile

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| **NAME:** PARTH BANSAL**AGE:**13 YRS**SCHOOL:**APEEJAY SCHOOL, NOIDA**CLASS:**X **HOBBIES:** I enjoy working hands on for various areas of my interest – making new and innovative things using waste material, robotics, mobile applications innovations or improvisations on the already existing ones, reading about the latest happenings in the scientific world through internet, etc. I love reading about quantum physics, space geometry and space time, etc. | Parth Bansal |

I applied for Ignite Competition through School, wherein I was assisted by my teachers to fill up a form that had asked for a lot of detailed information regarding my work. A dossier was prepared with an exhaustive write up as well as a PPT on my invention.

As a part of the award, I received a citation, a trophy and a bag full of book on Ignite 2016 on innovations made by children like me and other contestants.

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