CONNECT special

Editor's Desk

Edition 50

Dear friends,

Amidst lock down 4.0,life goes on with positive thoughts and hopes to limp back to normalcy.

Computers ,laptops, tabs and smart phones
crying to be left alone
Beaches, parks ,fields,nature trails
with open arms for us to be blown
We as usual step forward
with innate human capacity shone

Let's move on with this in mind-"**Worry is like a rocking chair: It gives you something to do but never gets you anywhere,**"*Erma Bombeck, humorist.*

Happy Reading!!

Regards,

Bhavna Botta

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Some useful mobile apps which makes inclusion possible by making access possible.

1. KNFB Reader App

With just a few taps on one's iPhone any printed text can be easily converted into an accurate speech. It is extremely useful as students need to review multiple documents while studying.

KNFB ReaderforWindows10 is the world's best solution for enabling blind and low-vision individuals to quickly and easily access the content of printed materials anywhere, anytime. It takes a photo of any text and instantly reads it aloud.

KNFB Reader's patented image processing technology makes it easy to photograph even the most complex documents - such as bills, brochures, books, or magazines -using the best optical character recognition (OCR) technology available. The text is read aloud using any one of Microsoft's built in voices or can be displayed in Braille with a compatible screen reader and refreshable Braille display.

KNFB Reader's proprietary audio and vibration guidance help the user take the perfect image of a document so that processing is fast and accurate.

2. SnapType Pro

The necessity to fill in worksheets and complete written responses is the part of the educational process that can become a real horror for students with dyslexia. The possibility of taking pictures of the required worksheet and use speech to text option to fill it in can be a life-saving one.

With SnapType, students can take a picture of their worksheets, or import worksheets from anywhere on their device. They can then use their Android device keyboard to add text to these documents and print, email, or share their creations. It is the perfect solution for kids, and even adults, who struggle with their handwriting.

SnapType Pro as the ability to easily share completed worksheets by email, Google Drive, Dropbox, etc. Additionally,unlimited worksheets can be stored/saved in SnapType Pro.

3. Ghotit

This is one of the most useful assistants that can be installed on computers with MacOS and Windows. Screen reader,spellcheck and grammar reviewer for writing activities, as well as reading assistant, are intended to help people overcome their learning problem.

Ghotit is a comprehensive literacy software. It helps children and adults with dyslexia/dysgraphia to read, write and correct texts.In addition, Ghotit Real Writer & Reader can be used as a stand-alone text editor.

4. Evernote

Useful organizer and planner where one can add documents, photos, audio files and many more so that it is easier to have access to the information that requires focus from any place and device.

Evernoteis a free app for your smartphone and computer that stores everything you could possibly imagine losing track of, like a boarding pass, receipt, article you want to read, to do list, or even a simple typed note.

5.Predictable APP

The application is designed especially for people who cannot speak so that they could start typing what they want to say and predicted sentences will be given to them to choose from.

Predictableis an AAC **app** designed to give a voice to someone who is unable to use their own.

Robotic exoskeleton

Originally featured in Access and Inclusion through Technology

Read more at:

https://yourstory.com/socialstory/2020/03/startup-robotic-device-spinal-injury-mobility

Founded by Vaidy Narayanan and Shiva Nagarajan, Bionic Yantra has built a Robotic Exoskeleton Assisted Rehabilitation System (REARS) that can accelerate the rehabilitation of individuals with spinal injuries and stroke.

By Roshni Balaji

According to a report published by the Rehabilitation Council of India, more than 15,000 people in India lose their ability to walk either due to a stroke or spinal injury. This translates to 15 new cases per million per year. For them, life changes for the worse. Even some of the most basic daily activities like walking, getting dressed, and travelling to work, becomes difficult. Recovery might take years, and many tend to lose their morale and confidence during this time.

To enable people to walk again, Vaidy Narayanan and Shiva Nagarajan founded Bionic Yantra in 2017. Along with their team, the duo developed a wearable robotic exoskeleton that assists those with spinal injuries move their limbs in controlled conditions, and thereby,advance their

rehabilitation. It took a little more than two years for the startup to design, test and build the product.

Picture shows Vaidy Narayanan and Shiva Nagarajan, Founders of Bionic Yantra with Anil Kumble.

The Bengaluru-based organisation aims to change the dynamics of the healthcare ecosystem with its Robotic Exoskeleton Assisted Rehabilitation Systems (REARS).

The genesis

When Vaidy's cousin Sandeep was diagnosed with Transverse Myelitis in 2007, a type of spinal cord inflammation, his life came to a standstill. "A lot of people tend to lose the ability to move around independently when they fall off trees, meet with an accident, or even get diagnosed with a particular illness. My cousin Sandeep V Manikrishnan was one of them," says Vaidy Narayanan, Founder and Director, Bionic Yantra.

The 27-year-old was paralysed and unable to walk. To help his cousin, Vaidy got him a dismantlable wheelchair, which, in turn, brought about a huge transformation in Sandeep's life. From being tied to apron strings, he became an earning member of his family by bagging a job at a bank.

A few years later, IIT-Madras, in collaboration with Phoenix Medical Systems, launched the country's first prototype of an indigenously-designed standing wheelchair. Known as 'Arise', the device was capable of enabling people to independently move from a seated to an upright position and vice-versa. Vaidy was quite impressed by the innovation. "I could see a lot of potential in the standing wheelchair. Around the same time, I also noticed exoskeletons being demonstrated on TV by a paralysed skier as part of the FIFA World Cup Inauguration. But I found out that the price of the exoskeleton was extremely high and beyond people's budget," he notes. Vaidy did a bit of digging and found out about Dr Arun Jayaraman of the Rehabilitation Institute of Chicago (now called Shirley Ryan Ability Lab).

"Not only was Arun an expert in adaptive technologies to treat physical disablement, but had also researched in areas like prosthetics and rehabilitation robotics. So, I sent him the video of the standing wheelchair prototype and expressed my interest in talking to him. And, Dr Arun replied that he would be more than delighted to have a chat during his trip to India two months from then," recollects Vaidy.

Vaidy wanted to build a cost-effective exoskeleton to rehabilitate people with spinal injuries. So, he quit his job at the transportation vertical of ACS and began looking for a team of like-minded people to join his mission. First, Vaidy approached his friend Shiva Nagarajan, who was leading the IP solutions team at Capgemini. Later, he contacted his batchmate from college, Amitav Chaudhuri, the Director of Timetooth Technologies, a Noida-based engineering solutions company. Both Shiva and Amitav were happy to pitch in.

In 2016, the trio met Dr Arun, who agreed to offer his guidance. Vaidy, Shiva and Amitav spent a few months consulting many doctors and prosthetic specialists to gather their views and gain clarity on various metrics like market demand and expectations. They registered Bionic Yantra in January 2017 and together raised about Rs 5 lakh from their savings. A few days later, the incubator Social Alpha showed immense confidence in Bionic

Picture shows -The team of BIONIC YANTRA

Yantra and invested a seed fund of Rs 50 lakh. About this, Srikanth Prabhu, the Portfolio Lead of Social Alpha, said, “Shiva and Vaidy were able to bring together an amazing set of collaborators with relevant expertise for quick product development. It was their passion and willingness to collaborate that made us invest in Bionic Yantra in its early days. More importantly,we saw Bionic Yantra as a force that could disrupt healthcare markets across the world and make rehabilitation a universal service accessible to all.”

How does the exoskeleton work?

Amitav started designing the robotic exoskeleton in 2017. Once it was complete and validated through three levels of tests, the team imported the components required to assemble the product from Germany and Switzerland.

“REARS was made using a complex set of control systems including the software as well as the hardware. A combination of motors, drives, AI and sensor technology was applied in the process. We obtained a great sense of gratification when we tested the device on people with various degrees of spinal cord injuries, and figured that it was working as expected,” quips Vaidy.

REARS is mainly useful post a spinal surgery or a treatment session at the hospital. It aids them in rehabilitation by enabling the patient to stand, walk and move their limbs under medical supervision.

The harness jacket provided as part of the device is first strapped after which the patient is lifted with the help of a powered winch. Next, the robotic exoskeleton is worn, after which the patient can move around and walk without any external support. In addition to this, the locomotive parameters and body vitals like joint movements, number of steps taken, heart rate, BP,etc, are recorded automatically by the device and sent to the cloud for the generation of medical reports.

Picture shows a person using exo skeleton

The Machine Intelligence and Robotics Center (MINRO) of IIIT Bengaluru recently purchased the exoskeleton from Bionic Yantra for further research. Tridib Roy,Senior Program Manager,MINRO said, "The team of Bionic Yantra have done a phenomenal job in the development of the assistive robotic device. And, we have bought it mainly for the purpose of research. We are looking forward to working with the startup in creating well-defined data architecture for the product,

make the harness more convenient by developing soft, body-hugging velcros and also set up certain personalised therapeutic protocols."

Presently,Bionic Yantra is eyeing to sell its device mainly in the US, Europe and India. The team has already signed an MoU with The Rehabilitation Institute of Chicago. The Central Drug Standard Control Organisation (CDSCO) in India has approved its manufacture, and the team is in the process of getting permissions from the US FDA. NIMHANS and AIIMS have also tied up with Bionic Yantra to conduct more clinical research.

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