LA TROBE UNIVERSITY AUSTRALIA

Technology Infusion Grand Challenge (2022)
766-2025 TIGC 2025 Technology Infusion Grand Challenge - Undergraduate edition (closed to new entries)

EXgMNrkW

Early Age Child Learning Disability Detection using Flexible wearable Device

Participant details

Phone number	+919322130400

Entry details

How did you hear about this competition?	✓ From my University
What is your team name?	NeuroBloom
Which country are you based in?	India
What is the name of your University?	Savitribai Phule Pune University
What is the name of your Department?	Computer Engineering
Team Leader's Given Name	Kartik

Team Leader's Family Name	Kumbhar
Team Leader's Gender	Male
Team Leader's contact email	kumbharkartik150@gmail.com
Team Leader's contact phone number	+919322130400
Team Leader's current course	Computer Engineering
Team Leader's year of undergraduate study	2nd Year
Number of team members **(2, 3, or 4)**	2
Team Member 1 - Given Name	Ajit
Team Member 1 - Family Name	Paraskar
Team Member 1 - Gender	Male
Team Member 1 - email	ajitparaskar87@gmail.com
Team Member 1 - contact phone number	+919673706382
Team Member 1 - current course of study	Computer Engineering
Team Member 1 - year of undergraduate study	2nd Year
Team Member 2 - Given Name	Hitesh
Team Member 2 - Family Name	Khare
Team Member 2 - Gender	Male
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Team Member 2 - contact phone number	+918788822575
Team Member 2 - current course of study	Computer Engineering
Team Member 2 - year of undergraduate study	2nd
What is the name of your project?	Early Age Child Learning Disability Detection using Flexible wearable Device

Describe the problem you are solving and its context.

> Children with learning disabilities encounter major problems at school and with others but catch-up chances expand when we find learning issues early. Current approaches to detect learning disabilities depend too much on teacher observation and parent assessment which show inconsistency and delay in their results. Generally these disabilities remain undetected until they create major learning difficulties for the child. The late discovery prevents these children from hitting their development targets which creates lasting educational and emotional problems.
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> Hospital access and diagnostic tools remain scarce in poorly funded neighborhoods which make early diagnosis much harder to achieve. Timely services including personalized teaching and therapy become available when problems are found at an early stage. Today's systems fail to work across large groups while identifying problems correctly at affordable rates.
>
> To help spot learning disabilities in children early our project creates an AI system that scans children for signs of learning difficulties. Our device quickly detects learning problems by observing specific movement traits, brain functions, and behavior patterns. Our solution uses advanced machine learning technology to measure learning patterns which both saves money and helps teachers serve all students more effectively.

Who will benefit from your solution?

> The early detection system helps children with learning disabilities get the right help they need at the right time. The results help parents and teachers create special programs while healthcare facilities and schools have a basic way to test for learning disabilities.

What technology is core to your solution?

> Our solution leverages machine learning and AI as its core technologies, enabling accurate analysis of behavioral, cognitive, and motor patterns. Utilizing advanced data processing frameworks like Librosa for audio and sensor data, the device integrates seamlessly with wearable accessible hardware devices which have eeg headset, eye-cameras, rasberry-pi.

Provide an overview of your solution's technical feasibility and why you think it will work effectively?

> We have proven our solutions can work because they combine powerful hardware with AI learning systems. Our system learns from many data sets to discover typical signs of learning disabilities. Our system tracks movement, thinking, and behavior through sensors which then goes through microcontrollers and connects to the cloud for analysis. Our system processing tools and neural network systems because they help us classify data precisely and expand our reach. The system detects small medical changes right away because it processes data better than people and helps doctors diagnose accurately. It is cost-friendly.

What do you think will be the most innovative aspect of your proposed solution?

> Our solution stands out by combining AI analysis with sensor systems that collect data in real time. Our system helps detect learning problems quickly and precisely when compared to traditional testing methods. The solution provides easy setup in many locations without requiring physical interventions.It is all in one detection product.

Tell us of any experience and skills your team have that will help you get your solution to market?

> The team consists of professionals with different skills with practical experience to take our solution from creation to market release. We know how to build early detection systems through machine learning while integrating hardware systems because of my earlier projects using sensors with Arduino and processing sensor data. AI applications that detect sound issues help us recognize behavioral data patterns which form the basis for spotting students with learning disabilities.
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> Our team's professionals bring knowledge of education technology product design and user experience to make our solution useful for learners. Our team understands all educational problems and builds operating systems that

solve specific issues in both schools and medical settings. Our team has experience with securing patents to protect ideas and knows how to handle health device regulations along with patent applications.

We have strong experience in sales and marketing which makes us qualified to launch this product into the market successfully. Our understanding enables us to partner with educational institutions healthcare providers and investors to spread this solution throughout both industries. Having technical knowledge of creation plus educational insights and business expertise gives us a strong foundation to introduce this solution to customers.

University approval

Please provide the name and contact details of the Head of Department who will be required to confirm team members are students at the university and approve participation in this competition.

The Approver will receive an email with instructions on how to complete the approval process online.

Approver's Title	Assistant Professor
Approver's Name	Suvarna G. Patil
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Log in to grand-challenge.latrobe.edu.au to see complete entry attachments.