Machine learning in health care:

Smart technology focuses on real-time identification of anxiety

The Anxiety Meter is a software algorithm that detects states of anxiety in children with autism spectrum disorder (ASD). Through a machine-learning algorithm, the Anxiety Meter measures an individual's heart rate and converts it into a visual representation of his or her anxiety level.

Anxiety can have a negative impact on an individual's physical and mental health, increase risk of other psychiatric disorders, and cause social challenges. Developed at Holland Bloorview Kids Rehabilitation Hospital's autism research centre, the Anxiety Meter addresses a widespread need for better identification of anxiety the moment it occurs.

Algorithm is compatible with tablets and smart watches.

Empowers self-awareness of anxiety in real-time and improves health outcomes.

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How it works

The Anxiety Meter algorithm was used to develop an app for children with ASD. The app wirelessly connects to wearable sensors. Children and youth with ASD and their families can use the app to track changes in heart rate based on interactive screen graphics.

Use of colour (green and red) signifies opposing states of anxiety – an indication in the green range represents a relaxed state, while red indicates the need to apply a calming strategy. The Anxiety Meter was developed with the intent to complement behavioural therapy in ASD by improving self-awareness for children and youth that experience anxiety and giving them the tools to identify and manage symptoms as they occur.

Why it matters

Research from the University of Amsterdam in 2011 reviewed 31 studies that focused on the presence of anxiety disorders in children under 18 years old with ASD, and deduced that approximately 40 per cent of these kids had at least one diagnosed anxiety disorder including specific phobias, obsessive compulsive disorders, social anxiety disorders, separation anxiety disorders and panic disorders.

The Anxiety Meter addresses an unmet need for children and youth with ASD and their families, which is further enhanced by a child or youth with ASD having difficulty identifying that they are anxious or recognizing the symptoms of anxiety.

For more information about commercial products or commercialization opportunities, please contact **Sharon Wong,** director of commercialization at sharon.wong@hollandbloorview.ca

To support research like this and others, please contact **Paige Cunningham**, senior development officer, community partnerships at pcunningham@hollandbloorview.ca