



## The brain-computer interface:

Endless possibilities for intuitive, hands-free interaction with the world

Brain-computer interfaces (BCIs) are state-of-the-art, wearable and user-centric technologies. For individuals with complex disabilities and who are non-verbal, BCIs open a new world of communication and meaningful participation in life activities.

Developed at Holland Bloorview Kids Rehabilitation Hospital are BCIs, which translate brain activity into commands to control surrounding technology.



BCIs are state-of-the-art, innovative and customizable. Opening up a world of possibility means individuals who have complex disabilities can have increased control over their lives.



Imagine: The idea of controlling your environment, simply by thinking about it. By harnessing thought-patterns, you eliminate barriers to communication.

## How it works

The technology consists of sensors, positioned on the user's head. The sensors detect brain activity and convert them into electrical signals for computer analysis. The computer is equipped with machine learning algorithms so that it can automatically differentiate among different types of brain patterns.

Once the desired type of brain response is found, the computer generates the corresponding control command. BCIs create endless possibilities for intuitive, hands-free interaction with the world.

Current health care applications include independent mobility (e.g. driving a wheelchair), activating a call bell, communication (e.g. operating a speech-generating device) and therapeutic arts, such as composing music or painting.

## Why it matters

Recent Holland Bloorview research has suggested that BCIs can detect imagined speech, paving the way for intuitive interaction with technology and unlimited possibility for communicating with the world around us.

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

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