HOTCHKISS BRAIN INSTITUTE

Hopewell M.I.N.D. Prize Finalists

Drs. Adam Kirton and Alicia Hilderley

Project Title: BCI@home: Brain computer interface solutions to enable youth living with severe disabilities

Imagine you are young, capable, full of dreams and potential, but you live in a body that cannot move. Unable to walk, use your hands, or speak, you are prevented from realizing your fundamental human rights to participate in life. Millions of children live with such massive challenges and few options exist to help them. We have leveraged brain computer interfaces (BCI) to solve this devastating problem. BCI can read brain activity through a simple headset and wirelessly transmit this information to a computer, allowing individuals to use their brainwaves to control and interact with their environment. BCI technology is advancing rapidly, yet children with life-limiting disabilities have been almost entirely neglected.

Our BCI4Kids clinical research program is the global leader in practical BCI solutions for neurodiverse children with complex needs. Our integrated, patient-centered, multidisciplinary clinical research program based at the University of Calgary has demonstrated the fundamental principles required for personalized BCI solutions to impact the lives of children living with severe neurological impairments. We've made great strides, but a quantum leap is required to scale our platform to the homes and communities of highly vulnerable children everywhere to help them live fuller, happier, healthier lives.

The BCI@home trial will implement and assess the impact of community-based, personalized BCI solutions for children living with severe disabilities, establishing this as the standard of care provincially, and creating a model for national and global expansion. Our powerful engagement of affected children and their families will identify personal functional goals that will be achieved with customized BCI solutions. Via partnerships with diverse knowledge users, families will have equal access regardless of geographical, socioeconomic, cultural or other barriers. BCI@home will provide new, life-changing opportunities for highly vulnerable children everywhere.

UNIVERSITY OF CALGARY