CWSF 2014 - Windsor, Ontario

Marin Schultz

Open-Source, Breath-Controlled Robotics for Prosthetic Applications

Challenge: Innovation
Category: Junior
Region: Lethbridge
City: Lethbridge, AB
School:

Abstract: This innovation project uses 3D printed parts, reliable biometric sensors (breath-pressure and accelerometer), open-source hardware and software to create a new kind of prototype prosthetic hand with rotating wrist. While common in hospital beds and wheelchairs, this control system has rarely been used in prosthetic hands. My intention is to help people by proposing a new low-cost alternative prosthesis.

Biography
Marin R. Schultz is a 13-year-old, grade 8 student from Lethbridge, Alberta. His interests range from Science, Mathematics and Engineering to Classic Literature from all periods, Ancient History, Art and Music. He is a competitive speed skater, and member of the Lethbridge Track and Field Club. He is also involved in Community Theater, choir, visual art making and is an award-winning nature photographer. Marin has been a builder since he was very young, and he is an avid collector of Lego. An early voice-controlled robotic rover project first inspired Marin. This led to his desire to control humanoid robotics and eventually prostheses. His interest in advanced prosthetic design stems from his desire to help a one-handed friend from Lethbridge who visited his 2012 science fair project involving EEG sensors and robotics. When he was able to move Marin's prototype hand using only his mind, he became very excited and said to his father "dad, I can move the hand!" Since then Marin has been on a quest to improve the designs of his robotic devices so they are more reliable, and cheaply available to a wider range of disabled people.

Awards	Value
Excellence Award - Junior - Bronze Medal Sponsor: Nuclear Waste Management Organization	$100
Western University Scholarship Bronze Medallist - $1000 Entrance Scholarship Sponsor: Western University	$1 000
Total	$1 100