

# CWSF 2015 - Fredericton, New Brunswick



## Marin Schultz

### Advanced Breath Interface and Control Systems For Robotics

**Challenge:** Innovation

**Category:** Intermediate

**Region:** Lethbridge

**City:** Lethbridge, AB

**School:**

**Abstract:** I created an advanced robotic control system using a breath pressure sensor, an accelerometer and complex software. This control system has many applications, however I have implemented it in a prototype prosthetic hand using 3D printed parts. A headset sends data from the breath pressure sensor and accelerometer wirelessly to the prosthetic arm where the data is either classified or mapped proportionally to hand movements.

#### Biography

Marin R. Schultz is a 14-year-old, grade 9 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 badminton enthusiast, and member of the Lethbridge Track and Field Club. He is also involved in youth choir, visual art making and is an award-winning nature photographer. Marin has been a builder since he was very young, and he is a skilled modeler. An early voice-controlled robotic rover project first inspired Marin. This led to his interest in hands free control of robotics and eventually to designing his own 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

The Dr. Lisa Su Award - Intermediate Sponsor: Advanced Micro Devices (AMD)	\$750
Excellence Award - Intermediate - Bronze Medal Sponsor: Youth Science Canada	
Western University Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: Western University	\$1 000
<b>Total</b>	<b>\$1 750</b>