

CWSF 2017 - Regina, Saskatchewan



Marin Schultz

Novel Prosthetic AutoGrasp Control System and Human-Prosthetic Interface

Challenge: Innovation

Category: Senior

Region: Lethbridge

City: Lethbridge, AB

School:

Abstract: This project proposes a novel AutoGrasp control system that allows a prosthesis to autonomously grasp "Smart Objects" thereby increasing the complexity of the movements achievable with simple sensory input. It further proposes a human-prosthetic interface, in the form of a touchscreen, that functions as visual sensory feedback. Underactuated prosthetic fingers were developed that exhibit self-adaptive behavior and enable the prosthetic to grasp objects reliably.

Biography

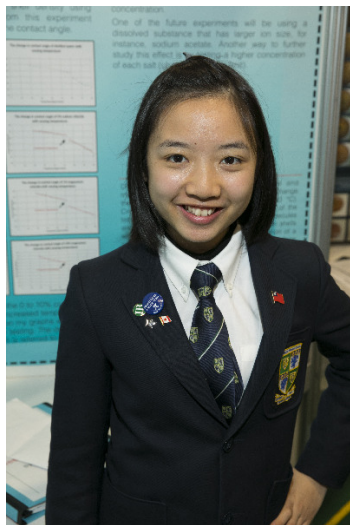
Hi, my name is Marin Schultz. I love building robots, and computer programming. Ever since I realized first-hand that my inventions can have a real world impact and help people, I have been inspired to build prosthetics in particular. I have won several national and international awards for my inventions including previous CWSFs. When I'm not inventing, my favourite thing to do is reading, especially philosophy, history and poetry. My interest in advanced prosthetic design stems from my desire to help a one-handed friend from Lethbridge who visited my 2012 science fair project involving EEG sensors and robotics. When he was able to close my prototype hand using only his mind, he became very excited and said to his father "Dad, I can close the hand!" It has become my passion to develop my biomedical inventions, and find new ways to advance them. I hope to inspire other students to learn, and to be excited and passionate about helping others through science.

Awards

Value

CAP Physics Prize - Senior Sponsor: Canadian Association of Physicists	\$1 000
Excellence Award - Senior - Silver Medal Sponsor: Youth Science Canada	
Dalhousie University Faculty of Science Entrance Scholarship Senior Silver Medallist - \$2500 Entrance Scholarship Sponsor: Dalhousie University, Faculty of Science	\$2 500
UBC Science (Vancouver) Entrance Award Senior Silver Medallist - \$2000 Entrance Scholarship Sponsor: The University of British Columbia (Vancouver)	\$2 000
University of Ottawa Entrance Scholarship Senior Silver Medallist - \$2000 Entrance Scholarship Sponsor: University of Ottawa	\$2 000
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
Total	\$9 500

CWSF 2017 - Regina, Saskatchewan



Melody Cheng

A New Phase of Water: Is this measurable with surface tension?

Challenge: Discovery

Category: Intermediate

Region: Vancouver Island

City: Victoria, BC

School: Glenlyon Norfolk School

Abstract: Recently, scientists discovered a new phase of liquid water, where a difference in hydrogen bonding exists from 40 to 60C. I wanted to know if this phenomenon could be observed in different concentrations of magnesium chloride and sodium chloride. I measured the surface tension of water by analyzing the contact angle in a droplet and was able to measure a variation in the crossover temperature.

Biography

I wanted to expand my knowledge about water since there are still many things about water that are a mystery to us. I was inspired to do my project when I read about scientists that found evidence of a new phase of water (published in November 2016). I hope in the future we as human beings will have the opportunity to explore and understand the topic fully. In my opinion, the essential thing when it comes to doing a science project is an open, passionate heart towards the subject. There may be failures along the way but learning how to not let these burdens pull you down will lead to you an astonishing experience.

Awards

Value

CAP Physics Prize - Intermediate Sponsor: Canadian Association of Physicists	\$750
Excellence Award - Intermediate - Bronze Medal Sponsor: Youth Science Canada	
Western University Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: Western University	\$1 000
Total	\$1 750

CWSF 2017 - Regina, Saskatchewan



Daniel Kornlyo

High School Voltage

Challenge: Innovation

Category: Junior

Region: Northern Vancouver Island

City: Gold River, BC

School: Gold River Secondary

Abstract: Following the repair and refit of a vintage Van de Graaff generator, a hybrid educational electrostatic generator was constructed. This device uses a Laddertron style of charge transport system within the familiar Van de Graaff framework. As an added educational feature, a remote control allows students to vary the inducing voltage, and its duty cycle, as well as the belt speed.

Biography

My name is Daniel Kornlyo. I am a science enthusiast, a figure skater, and a grade 8 student at Gold River Secondary School. I have a younger sister named Heather, and I live in a remote location on Vancouver Island where there is no cellular service. Initially, I wanted to do a project on the repair of my classroom Van de Graaff generator. As I learned more about electrostatic generators, I found out that there had been other types, such as the Pelletron and the Laddertron, which have been used in particle accelerators. This caused me to wonder if it would be possible to build a classroom electrostatic generator using a Laddertron style of belt. My plans after this fair is to test the longevity of my belt and pulleys and to add spark suppressor plates to my machine. My advice to students that are thinking of doing a project like this is to first make sure you are interested in the subject area and that you never give up.

Awards

Value

CAP Physics Prize - Junior Sponsor: Canadian Association of Physicists	\$500
Excellence Award - Junior - Silver Medal Sponsor: Youth Science Canada	
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
Total	\$2 500