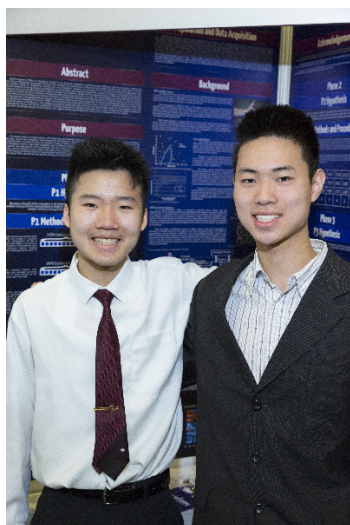


# CWSF 2018 - Ottawa, Ontario



## Tyler Sun, Peter Zhu

### COMET: A Novel Training Method to Optimize Robustness in Myoelectric Control

**Challenge:** Innovation

**Category:** Intermediate

**Region:** River Valley

**City:** Fredericton, NB, Moncton, NB

**School:** Fredericton High School, Harrison Trimble High School

**Abstract:** EMG control is an advanced myoelectric signal-processing technique that is the state-of-the-art technology to augment humans with machines. It is the process of recording muscle signals, classifying, and using them to control human-assisted robots or rehabilitation devices such as a prosthetic. We created a novel method to generate user-specific training profiles that reduces classification error rate by 33% on average across ten subjects.

### Biographies

**Tyler** - My name is Tyler Sun; I'm a grade 10 student at Fredericton High School with a keen interest in science, music, poetry. I spend most of my time either volunteering or working on school work. Other than extracurriculars, I have a passion for photography and have even won national awards for my photos. I have also won a couple of provincial medals for marksmanship and chess, and I'm also a big tech enthusiast.

1. Two summers ago as a volunteer camp counsellor down at worlds unbound, a science summer camp hosted here at UNB, I was fortunate enough to see a presentation by professor Kevin Englehart who is the director of the Institute of Biomedic...

**Peter** - Peter Zhu is a grade 10 student at Harrison Trimble High School in Moncton, New Brunswick. After creating his previous STEM project, a software that eases office ergonomic injuries through studying the user's motion patterns, Peter has been heavily exposed to biomedical engineering and myoelectric studies. As an avid programmer and innovator, Peter generated the ingenious idea of using deep learning to optimize training in EMG-control systems and worked alongside Tyler to make COMET a reality. Asides from being an aspiring scientist and innovator, Peter has won mathematics awards in contests hosted by Brock University, the University of Wat...

### Awards

### Value

Excellence Award - Intermediate - Bronze Medal Sponsor: Youth Science Canada	
Western University Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: Western University	\$1 000
Total	\$1 000