

# CWSF 2013 - Lethbridge, Alberta



## Vivian Li Ge Yang

### Controlling Telerobots over the Web using Natural User Interface (Kinect)

**Challenge:** Information

**Category:** Junior

**Region:** Greater Vancouver

**City:** Vancouver, BC

**School:** Lord Byng Secondary

**Abstract:** The project creates a system in which human's body movement can be simultaneously reproduced on a telerobot via the Internet. The technology can be used for some "virtual reality" applications like long-distance surgery. Several hardware/software platforms are connected through C# and Java programming including posture control on the Kinect, data transmission through TCP/IP protocol by using Sockets, and LEJOS programming on the LEGO NXT Robot.

#### Biography

I am a Grade 8 student in Vancouver, BC. My hobbies range from fine arts to sports to computer science, and I've gotten gold at regional and international piano competitions, gold provincially and silver nationally in competitive Chinese chess in China and an "Excellence Award" for art at an international competition. I believe that there are no two areas that are completely unrelated! That's also apparent in my project, with its integration of computer engineering and a more human way of control. My inspiration came from first wanting to monitor a bunny's health while snowboarding, then thinking about nuclear disasters such as Chernobyl and Fukushima and how a telerobot that could replace humans in situations restricted by time, cost and safety would be extremely useful for saving both economic costs and human lives! My project has immense room for future development both in technical areas and user experience areas, and I believe that science is never 'finished' and that there is only 'better', never 'best'! For anyone doing a project, look into as many realms and areas as possible, and never be afraid to integrate your interests together. For me, arts plus sciences equals anything is possible!

#### Awards

#### Value

CSSE Engineering Innovation Award - Junior Sponsor: Canadian Society for Senior Engineers	\$500
Challenge Award - Information - Junior Sponsor: Intel of Canada, Ltd.	\$500
Excellence Award - Junior - Silver Medal Sponsor: Youth Science Canada	\$300
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
<b>Total</b>	<b>\$3 300</b>

Youth Science Canada  
PO Box 297  
Pickering ON L1V 2R4  
www.youthscience.ca / info@youthscience.ca  
416-341-0040