

## CWSF 2018 - Ottawa, Ontario



### Alexander Charnetski

#### Reflection of Ultrasonic Sound

**Challenge:** Discovery

**Category:** Junior

**Region:** South Fraser

**City:** Delta, BC

**School:** Annieville Elementary

**Abstract:** My soundwave experiment examines how certain materials can either reflect, absorb or diffuse sound waves. Using an Arduino and an ultrasonic sensor emitter/transceiver, I programmed the Arduino to measure the amount of time it took for the ultrasonic pulse to return. My sensor could be used to safely lower a crane's payload or to make autonomous vehicles and robots navigate more accurately.

#### Biography

Alex Charnetski is a grade 7 student from Delta, British Columbia. He is an enthusiastic maker and can often be found coding, designing on OpenSCAD and 3D printing pieces for his latest projects. Alex is also active in the Scouts Canada 8th Surdel Troop, U-13 soccer team member and plays clarinet in his school band. He and his family love to travel, with some of his favourite places visited being Venice, Iceland, Rome and Morocco. While navigating an MBot through a maze, Alex found that the ultrasonic sensor was unreliable when reflecting on porous surfaces. This discovery inspired him to focus his project on this area. In the future he would like to extend his experiments on sound wave reflection to further study the density of various materials in relation to their ability to slow down sound waves. This study would help determine the best type of materials for sound absorption or reflection in a scientific or building project. For fellow students thinking about doing a project, Alex suggests that you choose an area you are really interested in and dive deep. He finds inspiration in sharing ideas with fellow project developers, which in turn enhances his own work.

Youth Science Canada  
PO Box 297  
Pickering ON L1V 2R4  
[www.youthscience.ca](http://www.youthscience.ca) / [info@youthscience.ca](mailto:info@youthscience.ca)  
416-341-0040