

# CWSF 2018 - Ottawa, Ontario



## Brendon Matusch

### Development of an Autonomous Vehicle Using Machine Learning

**Challenge:** Innovation

**Category:** Intermediate

**Region:** Sudbury

**City:** Sudbury, ON

**School:** Lo-Ellen Park S.S.

**Abstract:** For this project, I developed a level 2 autonomous vehicle, including systems for steering, speed control, and stop sign detection. A variety of machine learning and conventional control techniques were tested for this task. In combination, they allowed me to produce a reliable, robust, and safe autonomous vehicle that detected the road lane and optimized its own steering system while driving.

#### Biography

My name is Brendon Matusch. I am in grade 10 at Lo-Ellen Park Secondary School. My hobbies include FIRST Robotics (I am on Team 4069), playing the piano, and of course science fair. I plan to go to the University of Waterloo for software engineering, and then move to Silicon Valley. My project this year, in which I developed an autonomous vehicle, was inspired by Tesla (especially Andrej Karpathy and of course Elon Musk), who are doing some fantastic and exciting work to bring us closer to practical autonomous and electric vehicles. I was also inspired by previous visits to the Canada-Wide Science Fair in 2016 and 2017, where I was originally introduced to the incredible world of machine learning and neural networks. Next year, I plan to investigate a different field of machine learning, possibly intersecting with my interests in music or quantum mechanics. The most important advice that I have for other students interested in science fair is the value of hard work and perseverance. I have been working steadily on this project since July, and it has been extremely difficult at times. I have learned never to give up, and that lesson has paid off.

#### Awards

#### Value

European Union Contest for Young Scientists - Trip to EUCYS Sponsor: The Gwyn Morgan and Patricia Trotter Foundation	\$3 000
Youth Can Innovate Awards - Intermediate Sponsor: The Gwyn Morgan and Patricia Trotter Foundation	\$750
Excellence Award - Intermediate - Gold Medal Sponsor: Youth Science Canada	
Challenge Award - Innovation - Intermediate Sponsor: Youth Science Canada	
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
Best Project Award Sponsor: Youth Science Canada	\$2 500
<b>Total</b>	<b>\$10 250</b>

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