

CWSF 2016 - Montreal, Quebec



Kelvin Zhang

Using Genetic Algorithms to Create Safer Self-Driving Cars

Challenge: Information

Category: Intermediate

Region: Greater Vancouver

City: Coquitlam, BC

School: Gleneagle Secondary School

Abstract: The project aims to use a neural network to control a self-driving car, making it able to think like a human. The network was trained using a genetic algorithm inspired by biological evolution. Unlike current self-driving cars, the system was not taught anything and was able to go from having no knowledge about driving to becoming a fully-autonomous vehicle, learning and adapting by itself.

Biography

Kelvin Zhang is a grade 10 student at Gleneagle Secondary in Coquitlam, BC. He spends his time working on programming projects, playing sports, and innovating creative solutions for real-world problems. Though this is his third time at the Canadian Wide Science Fair, each trip has been a unique experience and has led him to make new connections, learn about the culture, and bring back two silver medals. Kelvin has a deep interest in the fields of STEM, and he has helped organise many science events and inspire young scientists. He is currently part of the News and Insights team for the Canadian Young Scientist Journal, also playing a role as an ambassador. His focus in the past few years has been in artificial intelligence and deep learning, leading him to create a novel solution which improves on the flaws of current self-driving cars. He believes that his solution can eventually lead to a truly autonomous self-driving car ? completely eliminating the risk of crashes caused by human error ? as well as being cheap to produce. In the future, he wishes to work for a large-scale technology company, or even start his own.

Awards

Value

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| The Actuarial Foundation of Canada Award - Intermediate Sponsor: The Actuarial Foundation of Canada | \$750 |
| Challenge Award - Information - Intermediate Sponsor: Youth Science Canada | |
| Excellence Award - Intermediate - Gold Medal Sponsor: Youth Science Canada | \$250 |
| Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University | \$4 000 |
| Total | \$5 000 |