

CWSF 2014 - Windsor, Ontario



Twesh Upadhyaya

Exploring Cellular Automata Music

Challenge: Discovery

Category: Senior

Region: Simcoe County

City: Barrie, ON

School: Bear Creek S.S.

Abstract: This project uses cellular automata to generate music. It explores the small- and large-scale patterns found in cellular automata and their parallels in compositions. Automata are simulated and various functions are tested to determine how best to extract music from grid states. The results demonstrate that it is possible to make listenable music from automata. This project has applications in the development of elevator music.

Biography

My name is Twesh and I am a Grade 11 student at Bear Creek Secondary School in Barrie. This is my first time attending CWSF and I am looking forward to the experience. I am interested in math and science and I plan to go to university in a STEM field. I am the Grade 11 Representative on my Student Council and the co-vice-president on Music Council. I enjoy playing music and I am a percussionist in three school bands. I also play piano outside of school. My favourite sports are cross-country and basketball. I have a keen interest in mathematics and I have written numerous math contests. I am a member of my school's math club and I tutor in the Math Help Room. My project allowed me to combine two things I love, math and music, and I really enjoyed working on it. My advice to anyone doing a science fair project is to find a topic that really interests you and to try and combine different fields, as some of the most interesting discoveries happen at the intersection of two different disciplines.

Awards

Value

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| Excellence Award - Senior - Bronze Medal Sponsor: Nuclear Waste Management Organization | \$100 |
| University of Ottawa Entrance Scholarship Senior Bronze Medallist - \$1000 Entrance Scholarship Sponsor: University of Ottawa | \$1 000 |
| Western University Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: Western University | \$1 000 |
| Total | \$2 100 |