

# CWSF 2014 - Windsor, Ontario



## Alex Tomala

### An Innovative Approach to Multi-core Processor Interconnection Networks

**Challenge:** Information

**Category:** Senior

**Region:** Bay Area

**City:** Hamilton, ON

**School:** Cardinal Newman Catholic S.S.

**Abstract:** This project aims to assess the potential of a tree-based interconnection network with a hierarchy-based cache coherence protocol to interconnect a large number of processor cores together, compared to a 2d-mesh interconnection network and cache coherence protocol. The architecture was developed and implemented on the GEM5 simulator and on a Altera FPGA.

#### Biography

I am a grade 11 student at Cardinal Newman Catholic Secondary School. I am a member of multiple clubs which include the Peer Mentors, Year End Video, and Science Olympics. I represent my school in many different Math, Physics, and Computing competitions, which are fields that I am interested in. I plan to study Math, Physics, and Computers in University and proceed with graduate work after. My passion for Science and Technology was fostered at a young age when I was interested in space. That interest developed into Math, Physics, and Computers. I am inspired by John von Neumann, as he made many contributions in various fields, which is what I want to do.

#### Awards

#### Value

|  |                 |
|--|-----------------|
| Challenge Award - Information - Senior<br>Sponsor: Youth Science Canada  | \$1 000         |
| Excellence Award - Senior - Silver Medal<br>Sponsor: Youth Science Canada  | \$300           |
| Dalhousie University Faculty of Science Entrance Scholarship<br>Senior Silver Medallist - \$2500 Entrance Scholarship<br>Sponsor: Dalhousie University, Faculty of Science | \$2 500         |
| UBC Science (Vancouver) Entrance Award<br>Senior Silver Medallist - \$2000 Entrance Scholarship<br>Sponsor: The University of British Columbia (Vancouver)                 | \$2 000         |
| University of Ottawa Entrance Scholarship<br>Senior Silver Medallist - \$2000 Entrance Scholarship<br>Sponsor: University of Ottawa  | \$2 000         |
| Western University Scholarship<br>Silver Medallist - \$2000 Entrance Scholarship<br>Sponsor: Western University  | \$2 000         |
| University of Windsor Entrance Scholarship<br>Senior Challenge Award Recipient - \$2000 Entrance Scholarship<br>Sponsor: University of Windsor                             | \$2 000         |
| <b>Total</b>   | <b>\$11 800</b> |