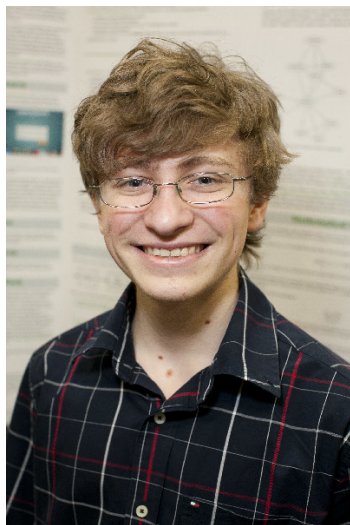# Nicholas Schiefer

Apodora: Markov Chain-Inspired Microsearch

Challenge: Information
Category: Senior
Region: York
City: Pickering, ON
School: Holy Trinity School

Abstract: A novel information retrieval algorithm called "Apodora" is introduced, using limiting powers of Markov chain-like matrices to determine models for the documents and making contextual statistical inferences about the semantics of words. The system is implemented and compared to the vector space model. Especially when the query is short, the novel algorithm gives results with approximately twice the precision and has interesting applications to microsearch.

Biography

Nicholas is a Grade 11 student at Holy Trinity School. When not leading the robotics team, studying for a math contest, programming, or thinking about programming, Nicholas likes to read, ski, and blog. At school, he founded the HTS Hawks Robotics team, helps produce the school yearbook, was a member of the winning York Engineering and Science Olympics team, peer tutors mathematics, and has received the General Proficiency award for his academic average for the past four years. Outside of the classroom, Nicholas participates in the University of Toronto Mentorship Program, the Fields Institute Math Circles, and contributes to his small open source software projects. This past summer, Nicholas attended Shad Valley UBC, where his team received attention from the national media for their project, an automatically locking wheelchair break. During the summers, Nicholas spends his time programming, learning, and working as a Student-on-Call at the IBM Toronto Lab in Markham, Ontario. Once he graduates from high school, Nicholas hopes to pursue an undergraduate and graduate education in computer science and mathematics and eventually pursue a career in a related field.

Awards	Value
The Actuarial Foundation of Canada Award - Senior	$1 000
Challenge Award - Information - Senior Sponsor: Intel of Canada, Ltd.	$1 000
Excellence Award - Senior - Gold Medal Sponsor: Youth Science Canada	$1 500
Dalhousie University Faculty of Science Entrance Scholarship Senior Gold Medallist - $5000 Entrance Scholarship Sponsor: Dalhousie University, Faculty of Science	$5 000
UBC Science (Vancouver) Entrance Award Senior Gold Medallist - $4000 Entrance Scholarship Sponsor: The University of British Columbia (Vancouver)	$4 000
University of Manitoba Entrance Scholarship Senior Gold Medallist - $5000 Entrance Scholarship Sponsor: University of Manitoba	$5 000
The University of Western Ontario Scholarship Gold Medallist - $4000 Entrance Scholarship Sponsor: University of Western Ontario	$4 000
University of Ottawa Entrance Scholarship Senior Gold Medallist - $4,000 Entrance Scholarship Sponsor: University of Ottawa	$4 000
Total	$25 500