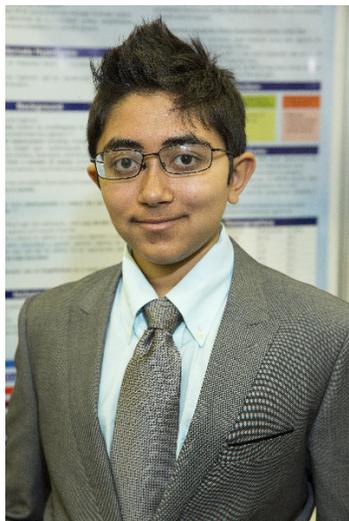


CWSF 2014 - Windsor, Ontario



Avinash Pandey

Addressing Forgetfulness as a Contributor to Inactivity: A Text Message Solution

Challenge: Health
Category: Senior
Region: Waterloo-Wellington
City: Waterloo, ON
School: Waterloo Collegiate Institute
Abstract: Inactivity post-heart attack is common and can have serious repercussions. The purpose of this study was to assess the role of forgetfulness in inactivity and the effectiveness of an automated text message reminder system to improve exercise adherence. In 50 individuals, text message reminders resulted in a 40% improvement in exercise adherence over 1 year. Forgetfulness appears to be a significant contributor to inactivity.

Biography

My name is Avinash Pandey and I am a grade 11 AP student at Waterloo Collegiate Institute in Waterloo, Ontario. I am a bit of a science geek who believes that science can advance human understanding and contribute to the improvement of the human condition. I aspire to one day be a scientist, contributing to human knowledge and well-being. In grade 9, I participated in the Canada Wide Science Fair and won a gold medal and the challenge award for the best health science project. Last year, I won 3rd place at the 2013 Intel International Science Fair in Arizona. I was inspired to research exercise non-adherence when I became aware of the alarming statistics on high rates of inactivity and its impacts on disease progression and premature death. I developed a system of automated text messages to address this problem. During the upcoming months, I hope to have my findings published so that the system I have created can benefit others. I have one piece of advice for anyone who is working on a science fair project this year: don't be afraid to explore an novel concept. Sometimes the simplest ideas can have the most profound impact.

Awards

Value

Awards	Value
Excellence Award - Senior - Silver Medal Sponsor: Youth Science Canada	\$300
Dalhousie University Faculty of Science Entrance Scholarship Senior Silver Medallist - \$2500 Entrance Scholarship Sponsor: Dalhousie University, Faculty of Science	\$2 500
UBC Science (Vancouver) Entrance Award Senior Silver Medallist - \$2000 Entrance Scholarship Sponsor: The University of British Columbia (Vancouver)	\$2 000
University of Ottawa Entrance Scholarship Senior Silver Medallist - \$2000 Entrance Scholarship Sponsor: University of Ottawa	\$2 000
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
Total	\$8 800

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CWSF 2014 - Windsor, Ontario



George Utsin

AlgEYE: Automation of Algal Hydrogen Production

Challenge: Innovation

Category: Senior

Region: Waterloo-Wellington

City: Waterloo, ON

School: Waterloo Collegiate Institute

Abstract: AlgEYE is a system that automatically monitors algal growth and controls hydrogen production. Green algae is known to produce hydrogen gas under anaerobic states influenced by sulfur depletion, however this can have negative long term repercussions on the algae. By creating a system that automatically regulates the sulfur levels, hydrogen production is not sacrificed to algal nutrient starvation.

Biography

My name is George Utsin and I'm a student at Waterloo Collegiate. I'm interested in computer science but I'm always open to any other field of science. I plan on pursuing software engineering as my post-secondary education. I got a perfect score on the 2014 Junior CCC and I am a published developer on the Google Play Store. The inspiration to this project however started with the Sanofio BioGENEius Challenge, and it was there that I wanted to merge my interest in computer science with biotechnology. I plan on continuing this project by making my system more robust by controlling and automating more variables. The one piece of advice I would give to students is to not give up; there might be difficulties along the way, but don't stop trying because it's these difficulties that separate the average projects from the outstanding ones.

Awards

Value

Excellence Award - Senior - Silver Medal Sponsor: Youth Science Canada	\$300
Dalhousie University Faculty of Science Entrance Scholarship Senior Silver Medallist - \$2500 Entrance Scholarship Sponsor: Dalhousie University, Faculty of Science	\$2 500
UBC Science (Vancouver) Entrance Award Senior Silver Medallist - \$2000 Entrance Scholarship Sponsor: The University of British Columbia (Vancouver)	\$2 000
University of Ottawa Entrance Scholarship Senior Silver Medallist - \$2000 Entrance Scholarship Sponsor: University of Ottawa	\$2 000
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
Total	\$8 800

CWSF 2014 - Windsor, Ontario



Andrew Ilyas

Microfilters: Harnessing Twitter For Disaster Management

Challenge: Innovation

Category: Intermediate

Region: Waterloo-Wellington

City: Waterloo, ON

School: Waterloo Collegiate Institute

Abstract: MicroFilters is a novel system harnessing the power of Twitter for disaster response using automatic image extraction and machine learning. Previously, tweets were manually filtered for images or automatically classified using text. MicroFilters automates the filtering process using a novel image-based approach accelerating disaster response and producing richer data than text alone. MicroFilters was used by the UN during Typhoon Haiyan and the Oklahoma Tornado.

Biography

My name is Andrew Ilyas, and I go to WCI, Waterloo, Ontario. I enjoy math, programming, soccer, table tennis, and piano. I attended the 2012 CWSF in PEI. My project, MicroFilters, is a system that automatically extracts and classifies images linked to from Twitter, finding relevant images and getting them to rescue teams to accelerate disaster response. I got my inspiration while discussing disaster management with Dr. Patrick Meier, who mentioned the importance of images for concisely identifying the magnitude of damage in a disaster. MicroFilters started as an image extractor, crawling links referenced in tweets during a disaster. However, my passion for machine learning led me to create a system that not only extracts images, but also accelerates the rescue process by replacing the manual lengthy classification tasks. Currently, MicroFilters is publicly available online. It was used by the UN during the Philippines' Typhoon, for which MicroFilters was featured on the local news. In the future, I hope to use more machine learning techniques in order to boost MicroFilters' efficiency and responsiveness. If I were to say one thing to future participants, it would be to apply your skills and your passions to your project, whatever it may be.

Awards

Value

Excellence Award - Intermediate - Silver Medal Sponsor: Youth Science Canada	\$300
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
Total	\$2 300

CWSF 2014 - Windsor, Ontario



Devanshi Shukla

Quorum sensing: A novel approach for identifying anti-microbial herbal plants

Challenge: Innovation

Category: Intermediate

Region: Waterloo-Wellington

City: Guelph, ON

School: Centennial Collegiate & Vocational Institute

Abstract: Measuring reduction of luminescence in *V. fischeri* due to the addition of 6 medicinal plants (Holy Basil, Cumin, Coriander, Nutmeg, Turmeric & Artemisia) is a new approach for quantifying the efficiency of their anti-bacterial compounds. This research explored the effect of extracts in direct contact with bacteria as well as the volatile effect of fresh leaves and compounds without contact.

Biography

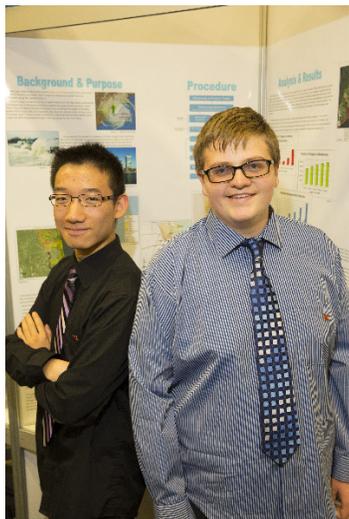
While I was in India this summer, I noticed that a lot of houses including ours kept Holy Basil plants near the entrance, and that it was a common and old custom to do so. I asked my grandpa why this was so, and he speculated that it kept our surroundings and home clean from diseases such as cholera or malaria. I didn't think much of it, but when I came across a TED talk on bioluminescent *V.fischeri* bacteria, I thought that it would be interesting to quantify and reveal the anti-microbial properties of Holy Basil and other medicinal plants by studying the reduction of luminescence in the bacteria. Moving on, I would like to study the effect of Holy Basil on cholera, confirm its mode of action and invent a way to increase levels of linalool (an anti-bacterial compound in the plant) in Holy Basil. My best advice to other students is to keep mind, eyes and ears open at all times, the best inspiration is found in very unexpected places. At school I am on the Social Responsibility Council and volunteer at the hospital. I love to paint, sculpt and read. Future career: Biological sciences!

Awards

Value

Challenge Award - Innovation - Intermediate Sponsor: BlackBerry	\$750
Excellence Award - Intermediate - Gold Medal Sponsor: Youth Science Canada	\$700
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
Total	\$5 450

CWSF 2014 - Windsor, Ontario



Kevin Strauss, Kevin Dong

The Calculated Crisis

Challenge: Environment

Category: Senior

Region: Waterloo-Wellington

City: Waterloo, ON

School: Waterloo Collegiate Institute

Abstract: Every year, hurricanes along the East Coast create storm surges which devastate cities. To help these cities, a method was devised using physics and ArcGIS, a mapping and data manipulation program, to estimate the extent and damage caused by hypothetical storm surges. With Jacksonville, FL, as the city of study, the method was used to calculate the surge extent to an accuracy of 81%.

Biographies

Kevin - Kevin Strauss is a 16 year old, grade 11 student currently attending Waterloo Collegiate Institute. He enjoys a variety of interests including travel, football, hockey, piano and rock collecting. Kevin has travelled throughout Canada, and the love of this great nation has stemmed his interest in Earth Sciences. "One of the main things that led me to this project was my enjoyment of our environment and the geology within it. This project gave me a chance to pursue the study of our earth and to incorporate prior knowledge of its features from my travels across Canada." Kevin hopes to continue the study of geological sciences at university, ...

Kevin - My name is Kevin Dong. I am a grade 12 student at Waterloo Collegiate Institute in Ontario. Robotics is currently one of my main interests and my career goal is to become an aerospace engineer. I play guitar and violin and also ski (alpine race), play tennis and ping-pong. Recently, I have earned both my glider and private pilot licences from the Royal Canadian Air Cadets. I enrolled in the Geotechnology course at my school this year because I wanted to broaden my knowledge and experience outside of plain mathematics and physics. Participating in the science fairs is part of that experience. Working with my partner Kevin Strauss, I have learn...

Awards

Value

Awards	Value
The Actuarial Foundation of Canada Award - Senior	\$1 000
Challenge Award - Environment - Senior Sponsor: Youth Science Canada	\$1 000
Excellence Award - Senior - Gold Medal Sponsor: Youth Science Canada	\$700
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
University of Ottawa Entrance Scholarship Senior Gold Medallist - \$4,000 Entrance Scholarship Sponsor: University of Ottawa	\$4 000
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
University of Windsor Entrance Scholarship Senior Challenge Award Recipient - \$2000 Entrance Scholarship Sponsor: University of Windsor	\$2 000
Total	\$26 700

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CWSF 2014 - Windsor, Ontario



Arjun Pandey

The Effects of Body Mass Index and Weight Loss on Pulmonary Blood Pressure

Challenge: Health

Category: Intermediate

Region: Waterloo-Wellington

City: Waterloo, ON

School: Waterloo Collegiate Institute

Abstract: Pulmonary hypertension can have many negative effects on individuals' health, including premature mortality. My study demonstrates a strong correlation between obesity (measured through Body Mass Index) and elevated pulmonary pressures, and also demonstrates a strong correlation between weight loss and a reduction in pulmonary pressures, suggesting that obesity is an important potential contributor to pulmonary hypertension.

Biography

I am a Grade 9 high school student in the Waterloo Collegiate Institute Pre-AP and Extended French programs. My areas of research include nocturnal hypertension, white coat hypertension, and pulmonary hypertension as well as the impact of lifestyle changes. Based on my research, I have 2 papers in print, and one pending publication. Effective communication has always been important to me. I have won local, regional and provincial speech and debate championships in both English and French. I also believe in social engagement, and uplifting those in need. Today's youth must be engaged in social discourse and must help contribute to the changes necessary in our world. I believe words must be put into action, and as such, I personally campaigned door-to-door for two weeks in both 2008 and 2012 for Barack Obama's presidential run. My brothers and I also created our own charity, www.child2child.ca, designed to empower youth to assist other youth in need around the world. We partnered with Mother Teresa's Missionaries of Charity, raised funds and personally volunteered to assist orphans and street children in impoverished India. To all my fellow competitors, good luck!

Awards

Value

Excellence Award - Intermediate - Silver Medal Sponsor: Youth Science Canada	\$300
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
Total	\$2 300

CWSF 2014 - Windsor, Ontario



Parker Hoyes

Trendsetter

Challenge: Discovery

Category: Junior

Region: Waterloo-Wellington

City: St. George, ON

School: St. John's-Kilmarnock School

Abstract: Trendsetter is a project created by Parker Hoyes in the areas of Theoretical Physics and Computer Science. This project uses a Java physics engine exclusively created by Parker Hoyes to model physics scenarios with which this project aims to discover a proof of the Butterfly Effect in Chaos Theory.

Biography

Parker Hoyes is 14 years old and attends St. John's-Kilmarnock School in grade eight in Southern Ontario. He was chosen to move on to the CWSF after participating in the Waterloo-Wellington Science fair with his project: Trendsetter. Parker has been experimenting with object-oriented programming languages from the age of eight, but he also enjoys working hands-on with analog electronics and programming microcontrollers. This knowledge in programming and theoretical physics inspired his project, Trendsetter, which uses physics models and computer simulations to test the validity of the Butterfly Effect in Chaos Theory. Parker spends much of his time developing programs on the computer, and currently aspires to be an indie developer. Although he enjoys working on his own projects, Parker is also very personable and works with others in development well.

Awards

Value

Excellence Award - Junior - Bronze Medal Sponsor: Nuclear Waste Management Organization	\$100
Western University Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: Western University	\$1 000
Total	\$1 100