May 18, 2018

![Intel logo]

19-Year-Old Engineer Builds Autonomous Window Cleaner for Commercial Buildings

Oliver Nicholls of Sydney, Australia, Wins $75,000 Top Prize at Intel International Science and Engineering Fair

PITTSBURGH--(BUSINESS WIRE)-- Oliver Nicholls, 19, of Sydney, Australia, was awarded first place for designing and building a prototype of an autonomous robotic window cleaner for commercial buildings at this year's Intel International Science and Engineering Fair, a program of Society for Science & the Public and the world's largest international pre-college science competition. The competition featured nearly 1,800 young scientists selected from 420 affiliate fairs in 81 countries, regions and territories.

This press release features multimedia. View the full release here: https://www.businesswire.com/news/home/20180518005537/en/

From left: Meghana Bollimpalli, Oliver Nicholls and Dhruvik Parikh celebrate on Friday, May 18, 2018, at the 2018 Intel International Science and Engineering Fair, a program of Society for Science & the Public and the world's largest international pre-college science competition. Nicholls, of Sydney, Australia, was awarded first place for designing and building a prototype of an autonomous robotic window cleaner for commercial buildings. Bollimpalli, of Little Rock, Arkansas, and Parikh, of Bothell, Washington, received Intel Foundation Young Scientist Awards. (Photo: Intel Corporation)

In essence, a flying drone-like device is tethered to the roof of a building and equipped with a powerful spray nozzle and rotating scrubbers. The $2,300 device can withstand 28 mph winds and could replace traditional methods that can exceed $11,000 per cleaning and reduce injuries in this high-risk occupation. Nicholls received the Gordon E. Moore Award of $75,000, named in honor of the Intel co-founder and fellow scientist.

Meghana Bollimpalli, 17, of Little Rock, Arkansas, received one of two Intel Foundation Young Scientist Awards of $50,000 for her novel, low-cost approach for synthesizing materials that could greatly cut the production and energy costs of making electrodes for

devices like supercapacitors. She found that combining common substances like tea and molasses with nitrogen and phosphorus in a commercial microwave formed a powder that could be used as a coating for electrode-like materials giving them similar properties of more expensive metals like platinum.

Dhruvik Parikh, 18, of Bothell, Washington, received the other Intel Foundation Young Scientist Award of $50,000 for his development of less expensive yet more robust ion exchange membranes for use in large industrial-scale batteries for storing solar or wind-generated electricity for later distribution. His composite membrane has 10 times the proton conductivity of the industry's standard membrane while reducing production costs by about 30 percent.

"Intel congratulates Oliver Nicholls, Meghana Bollimpalli, Dhruvik Parikh and all of the participants on their groundbreaking research that will help solve some of today's greatest global challenges," said Rosalind Hudnell, Intel vice president of Corporate Affairs and president of the Intel Foundation. "When students from different backgrounds, perspectives and geographies come together and share their ideas, there is no limit to what they can achieve."

In addition to the top winners, approximately 600 finalists received awards and prizes for their innovative research, including 24 "Best of Category" winners, who each received a $5,000 prize in addition to their $3,000 first place award. The Intel Foundation also awarded a $1,000 grant to each winner's school and to the affiliated fair they represent.

The following lists the 24 Best of Category winners, from which the top three were chosen:

Category	Name	City	State/Country
Animal Sciences	Ayman Isahaku and Anna Spektor	Glendale	Wisconsin
Behavioral and Social Sciences	Amy Shteyman	Great Neck	New York
Biochemistry	Rhea Malhotra	Bethlehem	Pennsylvania
Biomedical and Health Sciences	Nabeel Quryshi	Milwaukee	Wisconsin
Biomedical Engineering	Ronak Roy	San Diego	California
Cellular and Molecular Biology	Ella Feiner	Bronx	New York
Chemistry	Meghana Bollimpalli	Little Rock	Arkansas
Computational Biology and Bioinformatics	Marissa Sumathipala	Ashburn	Virginia
Earth and Environmental Sciences	Vasily Tremsin	Moraga	California
Embedded Systems	Burzin Balsara and Malav Shah	Plano	Texas
Energy: Chemical	Dhruvik Parikh	Bothell	Washington
Energy: Physical	Sathya Edamadaka	Lincroft	New Jersey
Engineering Mechanics	Frederik Dunschen	Munster	Germany
Environmental Engineering	Raina Jain	Greenwich	Connecticut
Materials Science	Daniel Kang	Tamuning	Guam

Mathematics	Muhammad Abdulla	Melbourne	Florida
Microbiology	Logan Dunkenberger	Roanoke	Virginia
Physics and Astronomy	Ana Humphrey	Alexandria	Virginia
Plant Sciences	Yueyang Fan	Shanghai	China
Robotics and Intelligent Machines	Oliver Nicholls	Sydney	Australia
Systems Software	Ruihua Chou	Beijing	China
Translational Medical Science	Edwin Bodoni	Greenwood Village	Colorado

"Congratulations to Oliver Nicholls, Meghana Bollimpalli and Dhruvik Parikh on winning the top awards at the Intel International Science and Engineering Fair!" said Maya Ajmera, president and CEO of Society for Science & the Public and publisher of Science News. "The breakthrough ideas presented by the winners and finalists demonstrate how the brilliant minds of future generations will make the world a better place. These young innovators are the stewards of our future, and we look forward to seeing all that they accomplish as they continue to pursue their interest in STEM."

The Intel International Science and Engineering Fair encourages millions of students to explore their passion for developing innovations that improve the way we work and live. All finalists are selected by an affiliated, local competition and receive an all-expenses-paid trip to the Intel International Science and Engineering Fair. At the competition, finalists are judged by hundreds of science, engineering and industry professionals who have a Ph.D. or equivalent (six years of related professional experience) or are senior graduate students with doctoral-level research in one of the 22 scientific disciplines above.

A full listing of finalists is available in the event program. The Intel International Science and Engineering Fair 2018 is funded jointly by Intel and the Intel Foundation with additional support from dozens of corporate, academic, government and science-focused sponsors. This year, approximately $5 million was awarded.

About Intel

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About the Society

Society for Science & the Public is dedicated to the achievement of young scientists in independent research and to public engagement in science. Established in 1921, Society is a nonprofit whose vision is to promote the understanding and appreciation of science and the vital role it plays in human advancement. Through its world-class competitions, including the Regeneron Science Talent Search, the Intel International Science and Engineering Fair, and the Broadcom MASTERS, and its award-winning magazine, *Science News* and *Science News for Students*, Society for Science & the Public is committed to inform, educate, and inspire. Learn more at www.societyforscience.org and follow us on Facebook, Twitter, Instagram and Snapchat (Society4Science).

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Source: Intel Corporation