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2017 SIEMENS COMPETITION IN MATH, SCIENCE & TECHNOLOGY
Regional Finalists – Carnegie Mellon University

BENJAMIN FIRESTER
SCHOOL: Hunter College High School, New York, NY
YEAR: Senior
HOMETOWN: New York, NY
PROJECT: "Modeling the Spatio-Temporal Dynamics of *Phytopthora infestans* on a Regional Scale"
FIELD: Environmental Sciences
MENTOR: Dr. Lior Blank, Agricultural Research Organization, Volcani Center, State of Israel Ministry of Agriculture and Rural Development

"I wanted to apply my passions for math and computer science to a topic that would have direct implications in people's lives."

Benjamin "Benjy" chose to focus his project on plant sciences because it was an area that could have impact and was new to him. He used his skills in math and science to develop a mathematical model that predicts the spread of Potato Late Blight, a devastating crop disease that causes tens of billions of dollars of crop damage each year worldwide. With this model, he hopes to provide farmers with a tool to help them properly protect their crops and eradicate the disease.

Benjy is on his high school's math and robotics teams and on the New York City math team. He was named a Davidson Fellow in 2017, winning a $25,000 scholarship, and is a two time (2016 and 2017) ISEF Grand Award winner in Plant Sciences.

In addition to his interests in math and science, Benjy is a musician. He has played piano for most of his life, including studying music at the Mannes College of Music for nearly 15 years. He has performed at Carnegie Hall and Lincoln Center.

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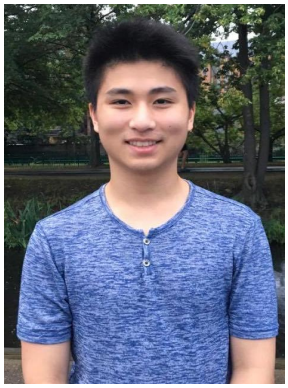

BRIAN HUANG
SCHOOL: Hunter College High School, New York, NY
YEAR: Senior
HOMETOWN: Fresh Meadows, NY
PROJECT: "On Sufficient Conditions for Trapped Surfaces in Spherically Symmetric Spacetimes"
FIELD: Mathematics
MENTOR: Dr. Marcus Khuri, Stony Brook University

"Math is an art form to me, and creating theorems upon theorems in order to build intricate logical structures within a field of mathematics is akin to constructing a philosophical theory, or creating the defining works of a literary or musical genre."

Brian found new geometrical conditions under which a spacetime—the fusion of time and three-dimensional space—with spherical symmetry may form a trapped surface, an indicator of evolution into a black hole. Brian has been interested in mathematics since elementary school. His father, a mathematics Ph.D., installed a whiteboard in the living room that was used for countless family experiments. One Sunday morning, Brian's father spurred him and his sister to ponder why any fraction had a terminating or repeating decimal, a question the they collectively solved on their whiteboard with numerical calculations. These experiments led Brian to want to explore mathematics at a young age.

For his Siemens Competition project, Brian explored an unsolved problem in general relativity called the Trapped Surface Conjecture which states that trapped surfaces can form in a spacetime from concentration of matter in a small enough volume. Trapped surfaces "seal the fate" of a spacetime into forming a black hole. This research progress on the Trapped Surface Conjecture is important because it sheds light on physical phenomena in extreme conditions of matter and gravity, and it ultimately helps us better understand the physical laws guiding the universe.

Brian attended the Program in Mathematics for Young Scientists (PROMYS) at Boston University for two years where he had a chance to learn college-level mathematics and conduct his first math research experiment.

Brian is also passionate about music composition due to its theoretical nature and has a deep appreciation for how something so mathematical can be abstracted through layers of timbre, texture, structure, dynamics, and rhythm to create an undefinable aesthetic piece. He enjoys playing golf because of the extreme technical difficulty of the swing as well as the slow strategic thinking required on the course.

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SKYLER JONES
SCHOOL: Ossining High School, Ossining, NY
YEAR: Senior
HOMETOWN: Ossining, New York
PROJECT: "Large Polaron Formation as a Charge Carrier Protection Mechanism in $MAPbBr_3$ and $CsPbBr_3$ Perovskite Crystals"
FIELD: Chemistry
MENTOR: Dr. Xiaoyang Zhu, Columbia University

"I am passionate about the environment, and specifically environmental sustainability. No matter how far technology progresses, humans and every other species are still utterly dependent on the environment for life, and it is in our best interest to focus technological and scientific progressions toward protecting and preserving the environment."

Skyler's passion for the environment inspired her to research a property that allows semiconductors made from the mineral perovskite to convert solar energy to electricity cheaply and efficiently. This finding could be used to develop new semiconductors and to make efficient solar panels that are less expensive than the ones sold today, making solar energy more widespread and reducing our need for fossil fuels.

Skyler qualified as a finalist for the International Sustainable World Energy Engineering and Environment Project Olympiad (ISWEEEP), and she won a silver medal in the Energy category. Skyler was also a National Merit Semifinalist. Her favorite subject is chemistry.

She is president of her high school's Math Club. She participates in Model United Nations, and plays violin in her high school's string ensemble. Skyler also swims on her school's varsity team and runs track. Outside of school, Skyler does yoga and is a huge fan of the Harry Potter series books and the ska band Reel Big Fish.

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RAHUL PARTHASARATHY
SCHOOL: Syosset High School, Syosset, NY
YEAR: Senior
HOMETOWN: Syosset, NY
PROJECT: "Fabricating and characterizing virtual Frisch-grid CZT detectors for gamma spectroscopy"
FIELD: Physics
MENTOR: Dr. Aleksey Bolotnikov, Brookhaven National Laboratory

"I am fascinated by how the world works, from the atomic level to the planetary level."

Rahul's ambition is to one day become a practicing physician, but he also has a passion for physics. His research project involving radiation detection is focused on the intersection of these two fields of science. He analyzed the ways that the physical properties of Cadmium zinc telluride (CZT) crystals can be characterized to identify the crystals that will make the most efficient radiation detectors. Unlike other types of semiconductor detectors, CZT detectors are able to operate at room temperature, giving them a wider range of applications. In addition to national security applications, CZT contributes to the field of nuclear medicine through medical imaging and radiosurgery.

Beyond his fascination with physics and desire to become a physician, Rahul is passionate about spreading his love of science to others. He volunteers at the Long Island Children's Museum, where he explains the scientific concepts behind the exhibits to children. He wants to spark the same interest in science among students that surfaced in him from reading books and participating in science fairs as a child.

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SRI YALAMANCHI
SCHOOL: Staten Island Technical High School, Staten Island, NY
YEAR: Senior
HOMETOWN: Staten Island, NY
PROJECT: "Curcumin Causes NK Cell-Mediated Repolarization of Tumor-Associated Microglia and Elimination of Glioblastoma and Glioblastoma Stem Cells"
FIELD: Biology
MENTOR: Dr. Probal Banerjee, College of Staten Island CUNY

"I am a very curious person by nature, so when I started to ask more questions, the world became a much more mysterious place. I eventually learned that biology held most of the answers to my questions."

Growing up eating Indian food, Sri grew curious about the possible connection between traditional cuisine—specifically spices like turmeric—and the lower rates of brain cancer in South Asian countries. In her research, she found that curcumin, a component of turmeric, effectively eliminates not only brain tumors but also their stem cells. Additionally, curmucin appears to recruit and stimulate immune cells to eliminate these tumors.

Sri's passion for biology was launched in 6th grade when she and classmates conducted experiments and presented research projects at the American Museum of Natural History. Her project, looking at how plants growing in waterlogged environments impact water quality, sparked a fascination for finding the answers to questions that can eventually help improve society.

Outside the lab, Sri is the captain of her school's Science Olympiad team and the Sustainability Club. She plays varsity tennis and as received a number of science awards, including being a semifinalist in the W!SE Quality of Life Competition in 2015 for work to decrease indoor air pollution in her school and being awarded 1st place for her Research Essay at the Weill Cornell Medical College Health Profession Recruitment/Exposure Program in 2016. Sri hopes to one day study neuroscience and become a neurologist or oncologist.

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TEAM COMPETITORS

JANG HUN CHOI, Jericho High School, Jericho, NY
SOOHYUN AHN, Middlesex School, Concord, MA
CHRIS LEE, Seoul International School, South Korea
PROJECT: "The Hadwiger-Nelson Problem with Two Forbidden Distances"
FIELD: Mathematics
MENTOR: Dr. Dan Ismailescu, Hofstra University

Jang Hun, Soohyun and Chris researched a geometric graph theory problem called the Hadwiger-Nelson Problem. In exploring one of the problem's properties called "chromatic numbers", they constructed and discovered unique graphs that may have more real-world applications than traditional answers to the problem. These research discoveries may help solve complex scheduling conflicts in aviation or railroad transportation.

JANG HUN CHOI
YEAR: Senior
HOMETOWN: Jericho, NY

"There are so many problems that are yet to be solved in this world."

Jang Hun aims to apply STEM to solve the world's problems. He has been inspired by reading the biographies of numerous scientists and mathematicians, such as Sir Isaac Newton who developed the fundamentals of calculus.

Jang Hun is vice president of the Quiz Bowl Club and participates in Mathletes. Outside of his STEM-related pursuits, he is also on the varsity swim team and plays the clarinet. An avid music fan, Jang Hun's favorite musician is Ed Sheeran, whom he appreciates because of his reflective and introspective lyrics. Though Jang Hun keeps busy, he's actually most passionate about keeping a balanced life, striving to exercise regularly and get enough sleep.

Fluent in Korean, Jang Hun aspires to be an astrophysics researcher. He is especially intrigued by the idea of being able to detect dark matter.

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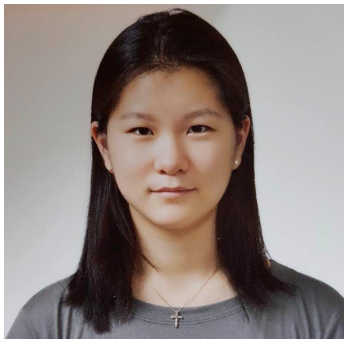

SOOHYUN AHN
YEAR: Junior
HOMETOWN: Seoul, South Korea

"I want to pursue a career in STEM because I am captivated by its tremendous potential to improve the world."

What Soohyun likes most about math is that there are always more efficient ways to solve a problem. Her interest in math started with geometry when, as a young girl, she found she loved folding origami. Her mother is also passionate about math and fostered this interest in Soohyun.

Outside of the lab, Soohyun is part of her school's math club and writes for the school newspaper. She also enjoys reading; her favorite book is *Tuesdays with Morrie.*

Fluent in Chinese and Korean, Soohyun is passionate about helping others and wants to pursue a career in STEM because she sees its tremendous potential to improve the world.

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CHRIS LEE
YEAR: Sophomore
HOMETOWN: Seoul, South Korea

"Science and mathematics would lose their excitement if they could not be applied to the real world."

Chris is innately curious and likes to investigate issues, whether they're related to STEM or something else. That's why he enjoys writing for the school newspaper, a job that allows him to do develop a deep understanding of many topics. He is also involved in the school's Science Club, Math Club, Forensics Team and Model United Nations.

Outside of school, Chris is an accomplished violin player. One of his proudest accomplishments is playing a recital at Carnegie Hall in New York.

Chris aspires to be a doctor or professor of biology one day, with the ultimate goal of applying his passion for science and problem-solving to help those in need.

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TEAM COMPETITORS

ALAN JIAN, Garden City High School, Garden City, NY
CAITLYN CHEN, The Spence School, New York, NY
AUSTIN LEE, Roslyn High School, Roslyn Heights, NY
PROJECT: "Synthesis and Evaluation of Novel Anti-Cancer Maleic Anhydride Derivatives for the Treatment of Cancers"
FIELD: Chemistry
MENTOR: Dr. Wei Zhu, SUNY Old Westbury

The team developed and tested chemical compounds that can be used to reduce growth of colorectal cancer and non-Hodgkin's lymphoma cells. Their objective was to obtain an effective treatment against the following cancers: colorectal (CRC), non-Hodgkin's lymphoma (NHL), and neuroblastoma (NB), all chosen for their widespread prevalence, high mortality rate, and lack of specific methods used in chemotherapy regimens. Since maleic anhydride, the chemical compound that the treatment is made from, is inexpensive and is already mass produced, this research may expand access to affordable cancer treatment.

ALAN JIAN
YEAR: Senior
HOMETOWN: Garden City, NY

"Cancer is a complex and interesting problem within society. As costs rise, it becomes harder and harder for patients to afford these treatments. I hope to change that."

Alan's team's research could not only provide an affordable treatment option for cancer patients who cannot afford other treatment options, but also a stronger treatment option with little cost to boost the strength.

Alan is a member of National Honor Society and a PSAT/NMSQT Commended Student. His favorite subject is physics. He is a member of the National Spanish Honor Society, Tri-M Music Honor Society, and American Sign Language Club.

He loves instrumental music and plays clarinet both in his school band and the Metropolitan Youth Orchestra. Alan's also a big fan of tennis player Juan Martin del Potro and author Paul Coelho's book *The Alchemist* because he says "it reminds [him] to pursue my dreams."

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CAITLYN CHEN
YEAR: Senior
HOMETOWN: Douglaston, NY

"Learning chemistry and understanding the principles behind molecular mechanisms bring me one step closer to explaining the workings and mysteries of the world around me."

Caitlyn wanted to apply her knowledge of chemistry to designing an effective anti-cancer drug and evaluating its effects, potentially explaining how it worked on the molecular level.

She is an AP Scholar with Distinction, and the founder and co-leader of the Spence School's robotics team. Her favorite subject is chemistry, but she has always been interested in math, as she gets to develop her problem-solving skills and collaborate with new people who she meets at math camps like PROMYS and HCSSiM.

Caitlyn was a 2017 National Chemistry Olympiad Finalist (Top 18 Scorer in NY State) and has qualified for the American Invitational Mathematics Exam (AIME). She also received the President's Volunteer Service Award (Gold).

Outside of academics, Caitlyn plays piano and earned the opportunity to play at Carnegie Hall after winning the Annual Young International Artists Competition. She competes on two swim teams and volunteers her time at the World Science Festival and City of Science Fairs. Caitlyn loves gardening and is very proud of her garden's stellar yield of hundreds of fruits and vegetables this year.

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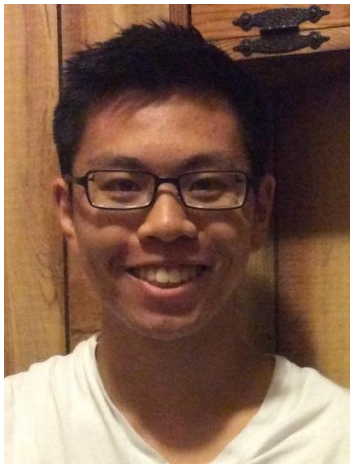

AUSTIN LEE
YEAR: Senior
HOMETOWN: Roslyn Heights, NY

"I enjoy STEM a lot mostly because it helps explain why much of the world works and behaves the way it does, and the field has and will continue to solve the world's biggest challenges and problems."

Austin was inspired to pursue his research after learning about cancer in 11th grade biology and reading more about it outside of school. He hopes to one day pursue a career in the medical field.

Austin is a member of National Honor Society and a PSAT/NMSQT Commended Student. His favorite subject is biology. He is a member of his school's Science Olympiad team and has competed internationally in the University of Toronto Biology Competition.

Outside of school, Austin enjoys scuba diving.

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TEAM COMPETITORS

JILLIAN PARKER, Half Hollow Hills High School West, Dix Hills, NY
AROOBA AHMED, Half Hollow Hills High School East, Dix Hills, NY
JIACHEN LEE, Half Hollow Hills High School East, Dix Hills, NY
PROJECT: "The Cilium and Centrosome Associated Protein CCDC11 is Required for Cytokinesis via Midbody Recruitment of the ESCRT-III Membrane Scission Complex"
FIELD: Biology
MENTOR: Dr. Ken-Ichi Takemaru, Stony Brook University

Jillian, Arooba and Jiachen discovered that when a particular protein is dramatically decreased in cells, cell division will not carry out properly which may have implications in different neurodegenerative diseases.

JILLIAN PARKER
Year: Junior
HOMETOWN: Dix Hills, NY

"I've been interested in science since age nine, when I used to watch 'Grey's Anatomy' with my mom. Today, I'm most passionate about the area of cell division because of the role it plays in cancer and hope to be a doctor or researcher one day, too"

Jillian has been interested in the sciences since she started watching "Grey's Anatomy" with her mom at the age of nine. It was being accepted into her school's research program that solidified that passion for biology—specifically for the area of cell division and the role it plays in cancer. She hopes to be a doctor or researcher one day.

Jillian also has been dancing competitively individually and with her team since the age of 9 and is a member of her school's community service club. Jillian also enjoys golfing and has been doing so from around the age of 7. She is also a member of her school's Women in Science and Engineering (WiSE) Club, which she joined because of the underrepresentation of women in STEM fields and the encouragement and opportunities the club offers to young women. Jillian hopes through her exploration of the STEM field, she can become a role model to other young girls and encourage them to take interests in science or math as well.

Jillian's Colombian culture also plays a large role in her life. She recently received a Hispanic Heritage award from her town which recognized her for her academic success as well as culture. Jillian also has a strong passion for community service and is a Girl Scout. Last year, Jillian and two of her peers earned their Silver Award, which was awarded after 50 hours of community service. Together, Jillian and her team worked to make young children's hospital experiences more comfortable by spending time with them, creating decorations, and donating toiletries for their stays.

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AROOBA AHMED
Year: Junior
HOMETOWN: Melville, NY

"I love biology, but I also love debate. They seem like opposites but are both really important and make me who I am. Discourse is very interesting and when it's about science; I really get involved."

Arooba was introduced to the sciences by her parents, who used to take her to numerous museums both near and far. As a child, she devoured National Geographic on TV and nonfiction books, and in school, her favorite subjects were always science because of the "real world applications and the natural phenomena." One day, she'd like to be a cardiologist or researcher and loves the idea of working with others.

Arooba was an octo-finalist in the New York State Debate Tournament and is also in the Speech and Debate Club. She also draws and runs cross-country.

JIACHEN LEE
Year: Junior
HOMETOWN: Dix Hills, NY

"I have always been intrigued by the complicated puzzle that is life. And ever since I was told as a child that if the brain were as large as the sun, it would contain more energy than the sun, I've been captivated by the workings of the human body."

Jiachen has been fascinated by the way the world works since she was a young child and overwhelmed with "the infinite opportunities to fuel my curiosities and discover new things." She's particularly interested in molecular biology and the vital molecules composing life and their roles in the formation of diseases.

Jiachen also runs track, does martial arts and plays the cello in her school orchestra.

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TEAM COMPETITORS

SAHITH VADADA, Herricks High School, New Hyde Park, NY
RUSHIKESH PATEL, Herricks High School, New Hyde Park, NY
VEDANT SINGH, The Wheatley School, Old Westbury, NY
PROJECT: "Evaluating the Effects of Graphene-Loaded Poly(4-vinylpyridine) Electrospun Fiber Scaffolds and Spun-cast Thin Films on the Proliferation and Differentiation of Dental Pulp Stem Cells *in vitro*"
FIELD: Materials Science
MENTOR: Dr. Miriam Rafailovich, Stony Brook University

Sahith, Rushikesh and Vedant developed a novel fibrous scaffold that templated the growth of dental pulp stem cells; their findings can potentially improve bone and tissue regeneration.

SAHITH VADADA
YEAR: Junior
HOMETOWN: Roslyn, NY

"I believe biology is the cradle of emerging sciences and continually merges life of the past, present, and future with boundless limits."

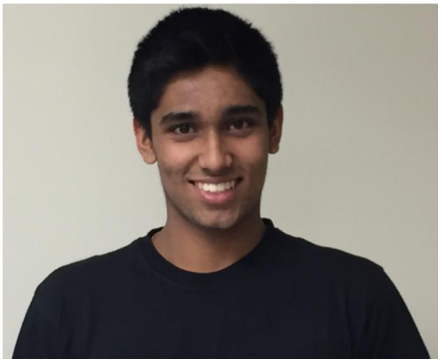
Sahith credits his early exposure to science for his interest in STEM. He's drawn to the fact that researchers in the field are always developing new, affordable, and science-based solutions to solve real-world problems.

Sahith's parents' experience with severe root canal treatments inspired him to research dental pulp stem cells. His firsthand witness of such invasive procedures activated his interest in bioengineering and its applications in regenerative medicine. His team's project may lead to low-cost scaffolds that support the regeneration of bone and limit the need for expensive and invasive bone grafting procedures for dental implants.

Sahith co-founded the Academic Quiz Bowl Club, was the co-captain of a third-place winning team at New York State Worldquest Competition, and placed 7th in a National Senior Spelling Bee held by the North South Foundation. He also is a member of the Tri-M Honors Society and has been awarded the Presidential Volunteer Service Gold Award for five-years of community service work in underprivileged communities in India, at the U.S. at Island Harvest Food Bank, and the North Shore University Hospital.

Sahith plays viola in his school's nationally recognized chamber orchestra and says that besides academics, he is passionate about sports because they rely on the "team and individual aspects of a goal-oriented activity."

Sahith notes the Percy Jackson books as his favorite series. As for music, he appreciates Kendrick Lamar's ability to mesh social activism and entertaining music and rhythms. Kevin Durant of the Golden State Warriors is Sahith's greatest role model because of his "tireless motivation to transform the game of basketball."



RUSHIKESH PATEL
YEAR: Junior
HOMETOWN: Albertson, NY

"Science is my favorite subject for it is the key to unlock the mysteries that the world lays forth for us and the way to give back to our community, our world, and most importantly, humanity."

As a young boy on a family trip to India, Rushi's grandfather, an orthopedic surgeon, told him that "science gives the world a second life," meaning that science can solve many challenges in the world. From that point on, he began to view the world through a scientific lens, attempting to find a solution to every problem. Rushi is passionate to make a difference in the STEM field.

Rushi notes that his team's field of research for their project, materials science, along with the area of bioengineering will provide alternative solutions in the field of regenerative medicine. His project highlights how stem cell based tissue engineering answers the need for a cost-effective therapeutic alternative that promotes the renewal—rather than the replacement—of dental tissue.

Rushi is the founder of the Green Globe Club which strives to find solutions that can be implemented in the daily routine life to combat climate change. He won 2nd place in the state level competition at the National History Day and was a 5th place finalist at the New York State DECA Conference. Rushi ranked 5th place in the National Euro Challenge Economics Competition and has been ranked in the top 1% American Mathematics Competition 10.

Rushi also believes in giving back to the community by teaching English, mathematics, and science to impoverished children at a school in rural India for the past three years. He also volunteers at the Northwell University Hospital. For his community service, he was awarded the Presidential Volunteer Service Gold Award.

Rushi enjoys playing trumpet at the Nassau-Suffolk Performing Arts Honor Band and Herricks Jazz Band. He plays for the Herricks Varsity Tennis Team and is a big Rafael Nadal fan, as well as an avid fan of the New York Yankees and Giants.

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VEDANT SINGH
YEAR: Junior
HOMETOWN: Roslyn Heights, NY

"My favorite thing about STEM is the creative problem solving required, especially for different olympiads and tournaments."

Vedant has been interested in conducting research on dental pulp stem cells because this project required using both chemical and biological research. When multiple fields of science work are used simultaneously at interfaces, he believes that a lot of the world's problems can be solved.

Vedant's father inspired his interest in STEM starting with math. As time went on, he broadened his interests to include science. Now, he has expanded his interest into computer science. Vedant also enjoys include being a part of his school's Quiz Bowl, Science Olympiad and Chess Teams.

Vedant has qualified for the American Invitational Mathematics Examination in both ninth and tenth grade, which only accepts 2.5% of participants. In these grades, he also qualified as a top 50 mathematicians in Nassau County. In his MATHCOUNTS chapter, he ranked first place in the countdown round.

Vedant holds a number of leadership positions in school, including President of the Class of 2019 and Mathletes Team President and Captain. Outside of school, Vedant plays double bass and bass guitar. He enjoys watching and playing basketball for fun while playing for his school's basketball team since seventh grade.

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TEAM COMPETITORS

STANLEY WONG, Hunter College High School, New York, NY
BAOKUN "JACK" GU, Manhasset Senior High School, Manhasset, NY
PROJECT: "Evidence for Small-Strain Burst Sources Proliferating in Enhanced LIGO Time Series Data"
FIELD: Physics
MENTOR: Dr. Brett Bochner, Hofstra University

Stanley and Jack developed a new computer algorithm for searching for gravitational wave signals in Laser Interferometer Gravitational-Wave Observatory (LIGO) data. These waves indicate ripples in the space-time continuum due to black holes mergers or other high-energy astrophysical processes in the universe. This new procedure would help us better understand the various elusive astronomical phenomena that occur in the universe.

STANLEY WONG
YEAR: Senior
HOMETOWN: New York, NY

"I'm most passionate about not only exposing myself to new knowledge and advances in math and science, but also sharing that knowledge with others in an attempt to get them excited, too."

Stanley's interest for STEM blossomed in elementary school. His parents supported his interest with books that explain everyday phenomena that taught him to question the world through a scientific lens. As he got older, books like Neil deGrasse Tyson's *Welcome to the Universe* supported his astrophysics interest. What he likes most about STEM is its ability to explain how the world works, and how STEM helps us tackle problems through innovative technological design.

Stanley's journey into astrophysics research began as a volunteer in the New York Hall of Science in the summer of 2016, where he presented and talked about scientific phenomena to the museum's visitors. Being around his favorite space exhibit enough times led him to want to learn more outside of the job. The following school year, he took supplementary astrophysics classes at the American Museum of Natural History and as a student at Columbia University's Science Honors Program. It was at Columbia where he learned about the recent developments in gravitational wave research and really wanted to be a part of the pioneering research in this field of astrophysics.

Stanley is on his school's math team, Science Bowl team, concert and jazz band, and badminton team. He is the captain on his school's Robotics Team. In the future, he wants to explore a career in astrophysics or aeronautical engineering with hopes of one day working for NASA or SpaceX.

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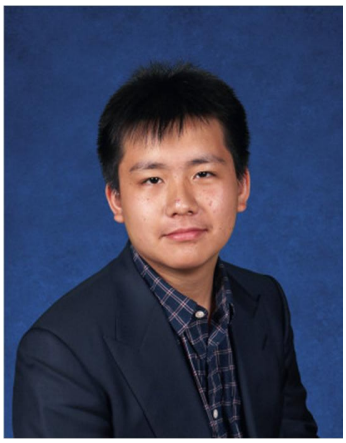

BAOKUN "JACK" GU
YEAR: Junior
HOMETOWN: Manhasset, NY

"Conquering challenges allows me to appreciate how much remains to be learned."

When Jack was young, the complexity of the universe fascinated him. He would spend hours reading through scientific articles and magazines to help him investigate the world around him. Although he has great interest for reviewing and studying research, Jack also finds hand-on research important. This past summer, he went on an expedition with the organization EarthWatch to Canada to study wildlife and the effects of global warming on wetland organisms.

Jack has been interested in astronomy since elementary school— the stars and galaxies have always been fascinating to him. Last year when he met his mentor Brett Bochner at Hofstra, Jack learned about his gravitational waves project, and he was instantly attracted to the subject.

While Jack has a rooted interest in physics, he is also inspired by other areas of academics. Jack is passionate about understanding science through the context of history. Jack believes that a deep understanding of science requires an understanding of how science is intertwined through history. In addition to academics and research, Jack spends his spare time immersed in history books, especially those involving the history of science and warfare. Jack's knowledge of military technology and history inspired his hobby of meticulous building and painting of his favorite model aircrafts and tanks.