

Brian Yikang Wu

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EDUCATION

Horace Mann School - GPA: 3.94/4.0 UW

09/2016 - 06/2020

- AP Courses: Physics 1 (5), Chemistry (5), Chinese (5), Calculus BC, Physics C Mechanics, Physics C E&M, Japanese
- ACT: Composite 36 (Mathematics 36; Science 36; Reading 36; English 35; Essay 10)
- SAT II: Math II 800; Chemistry 800; Biology 790

Columbia University Science Honors Program

09/2017 - 06/2018

- Coursework: Astrophysics, Relativity & Quantum Mechanics

AWARDS & HONORS

- 2020 Regeneron Science Talent Search Finalist – STS is the nation's oldest and most prestigious science competition
- 2019 Davidson Fellows Scholarship – Selected as 1 out of 20 nationwide “extraordinary young people who have completed a significant piece of work” in the fields of Science, Technology, Engineering, and Mathematics
- 2019 Intel ISEF – Top Award from the National Aeronautics & Space Administration (NASA)
- 2018 Intel ISEF – Academic Excellence Award (4-Year Renewable Tuition Scholarship from WVU)
- 2018 & 2019 Intel ISEF Finalist
- 2017 Siemens Competition in Math, Science & Technology Semifinalist
- 2019 New York City Science & Engineering Fair – U.S. Navy & Marine Corps Award
- 2018 New York City Science & Engineering Fair – NASA Earth System Science Award
- 2018 & 2019 New York City Science & Engineering Fair – First Award in Physics & Space Sciences
- 2017 New York City Downtown Mathematics Competition – First Place Award
- 2019 OCA-Westchester & Hudson Valley Chapter Youth Leadership Award
- 2016-2017 Horace Mann Men's Varsity Indoor Track Team Coach's Award

EXPERIENCE

Bryant Space Science Center, University of Florida || Researcher – Gainesville, FL

05/2017 - Present

- Analyzed Radial Velocity data from the SDSS-III MARVELS survey by creating innovative computing models and using regression analysis techniques to search for giant planets, brown dwarfs, and spectroscopic binary stars;
- Discovered 1 out of 24 circumbinary planets currently known to astronomers; this planet is the first-ever circumbinary planet detected using the Doppler spectroscopy technique (<https://www.sciencenewsforstudents.org/blog/eureka-lab/isef-2019-teen-astronomer-finds-planet-two-suns>);
- Created advanced computer software capable of generating synthetic spectra of any stellar system, the first of its kind in which synthetic spectra can be created for applications in Doppler spectroscopy, and performed n-body simulations;
- Developed a novel confirmation system using MATLAB and Python, an artificial intelligence-based Radial Velocity extraction program, and a forward modeling (FM) pipeline to calculate the circumbinary planet's orbital parameters;
- Performed a habitability study of the circumbinary planet and concluded that the planet lies within its habitable zone.
- A summary of my research is available at: <http://www.davidsongifted.org/fellows-scholarship/2019-fellows/brian-wu>

APSIS AERO Rocketry Club || President - Bronx, NY

09/2015 - Present

- Led a team of 16 students to design, build, test, and launch suborbital rockets from scratch while strengthening my leadership and technical skills with CAD, additive manufacturing, rocket propulsion elements, and aerodynamics;
- Founded my startup Apexial Innovations Inc based on my aerospace engineering experience with initial goals of improving performance of HTPB-based solid rocket motors and developing a commercially viable, highly efficient aerospike engine;
- My project “THINK BEYOND” was selected by Firefly Aerospace as one of 26 Dedicated Research and Education Accelerator Mission (DREAM) payloads representing 7 different countries to support and promote STEM interest worldwide; it will be launched early 2020 on the maiden flight of the company's Alpha rocket from Vandenberg Air Force Base (<https://firefly.com/firefly-aerospace-announces-dream-payload-participants/>);
- Will continue to pursue these interests in college by designing a low-cost, small-scale observatory orbiting in Earth's vicinity serving as an early warning system for detection of asteroids passing near Earth and researching potential opportunities to establish resource extraction centers and observatories on the Moon's surface.

EXTRACURRICULAR ACTIVITIES

- National Aeronautics & Space Administration (NASA) || Invited Speaker** - Washington D.C. **07/2019**
- Invited by NASA's Office of the Chief Scientist to present my research to NASA's scientists and engineers;
 - According to Dr. Louis Barbier, NASA's Associate Chief Scientist, I am the first high school student invited so far to present at NASA Headquarters. (<https://www.societyforscience.org/blog/young-astronomers-research-implores-us-to-think-beyond/>)
- TEDxJacksonville || Selected Speaker** - Jacksonville, FL **10/2018**
- Selected as 1 of 12 speakers out of over 300 applicants to give a talk about my research and its impact on society and humanity's interplanetary future at its "Exchange: Conversations for the Curious" conference;
 - My talk is available at: https://www.ted.com/talks/brian_wu_have_you_ever_seen_a_planet_with_two_suns
- World Science Festival || Invited Panelist** - New York, NY **06/2018**
- Invited to speak on a panel highlighting the power of STEM in solving society's most pressing issues.
- Flight Level 360 || Editor-in-Chief** **10/2017 - Present**
- Launched an aviation news site and travel blog (<http://www.flightlevel360.net>) to promote my passion for the commercial aviation industry;
 - Published comprehensive reviews of the commercial aviation industry and business case analyses of major airlines;
 - Attracted more than 2,000 monthly viewers with similar interests worldwide;
 - Recognized by major industry players including Lion Air Group, one of Southeast Asia's largest airline conglomerates.
- HM Science Magazine *Spectrum* || Managing Editor** - Bronx, NY **09/2015 - Present**
- Led 6 senior and 10 junior editors on writing, editing, and publishing scientific papers;
 - Authored numerous articles on scientific research, astronomy, astrophysics, aerospace engineering, spaceflight, and the commercial aviation industry;
 - Spectrum* received the "First Place with Special Merit" Award in the category of "Top-Scoring Magazines for 2018" from the American Scholastic Press Association (ASPA).
- HM F=ma Physics Olympiad Club || Founder & Captain** - Bronx, NY **10/2018 - Present**
- Founded a club for students interested in Physics and planning to participate in the F=ma Physics Olympiad;
 - Expanded the organization to provide tutoring services for students who experience difficulty in Physics classes;
 - Attracted over 30 students in 2019 alone to train for and participate in the 2020 F=ma Physics Olympiad.
- HM Varsity Cross Country Team** - Bronx, NY **08/2016 – Present**
- 4-Season Varsity Athlete (Cross Country, Indoor Track, Outdoor Track) since 9th grade.

COMMUNITY SERVICE

- Fun with Science! || President** – Westchester & Bronx, NY **09/2016 – 05/2019**
- Launched initiatives encouraging girls and underrepresented minorities in Westchester and the Bronx to explore and embrace the wonders of STEM in and outside of the classroom; Received the 2019 OCA Westchester-Hudson Valley Youth Leadership Award;
 - Taught STEM courses at local community centers and performed experiments to demonstrate the power of science.
- HM 246 || Program Leader** - Bronx, NY **09/2017 – Present**
- Taught classes in natural and social sciences to socioeconomically disadvantaged kids in the Bronx community;
 - Hosted birthday parties regularly for these children in community centers and homeless shelters in the Bronx.
- Ashita Tomorrow || English Teacher** - Bronx, NY; Sendai, Japan **09/2017 – 05/2018**
- Hosted weekly English lessons via Skype for high school students displaced by the 2011 Tohoku Earthquake & Tsunami.
- Edgemont Enrichment Center (EEC) || STEM Instructor** - Edgemont, NY **06/2019 – 08/2019**
- Created a hands-on curriculum and taught students the basics of astronomy and astrophysics;
 - Fostered a love of STEM in young students via engaging demonstrations, hands-on activities, and presentations about emerging technologies and innovations.

SKILLS AND INTERESTS

Computer Languages + Software: MATLAB, Python, Java, IDL, C#, HTML, Blender, AutoCAD, OpenSCAD, Unity 3D
Machine Learning: Neural Networks, Linear Regression, Support Vector Machines, Reinforcement Learning
Hardware: 3D Printer, Laser Cutter, Drill Press
Foreign Languages: Cantonese (Bilingual Proficiency); Japanese (Professional Working Proficiency)
Other Interests: Rube Goldberg Machines, Space Exploration History, Aviation Photography, Hip-Hop Music Production, Skiing, Squash, Bowling, Basketball