

Sayville High School's

Stellar Students Newsletter

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Month of November 2020

Accolades for RISE Students November 2020

RISE Students of Recognition:

On the night of the awards, please read this: Mrs. Brown - It is with great regret that I cannot be here tonight to honor these amazing students. These students are deserving of this recognition, not only because they have really awesome projects, but because they are passionate about science and engineering, they have incredible work-ethic and they genuinely believe that science research & engineering will continue to contribute to understanding the world around us, human impacts, and how to resolve those impacts to improve the quality of life for generations to come. I hope you all enjoy being introduced to these amazing young scholars. I look forward to being back soon!

Students to be recognized at BOE

The following students have either successfully completed GSS 313/314 through Stony Brook University's ACE Program OR have collaborated with former RISE student Lexi Brown from the Davalos Lab in the Department of Ecology & Evolution at Stony Brook University.

ACE Program

Emily Rosado - Geospatial Analysis of Atlantic Horseshoe Crab (*Limulus polyphemus*) Response to Human Impacts of their Environment

Swati Sheth - Using Node Excel to Evaluate Social Networks and Gun Violence

Sanjeeda Rahman - Geospatial Analysis of Commensalistic Organisms on *Limulus polyphemus*.

Davalos Lab

Sanjeeda Rahman is also working on a novel project using the *Random Tanglegram Partitions* to establish co-phylogenetic relationships between tapeworms and their hosts.

Jennifer O'Leary - Studying co-phylogenetic relationships of nectivore bats and their host plants using *Random Tanglegram Partitions*.

Gene Weng - Gene spent the summer learning masters level ecology & evolution. He will turn his focus on establishing co-phylogenetic relationships ticks and tick-bourne diseases using *Random Tanglegram Partitions*.

Projects Using GIS

Christina Guiffre - Geospatial Analysis of Groundwater Quality Correlated to Cancer Clusters in Suffolk County, New York.

Christina collaborated with the Geospatial Analyst from Adrienne Esposito's Office at Citizen Campaign for the Environment to obtain the spatial chemical data for her analysis.

Nicholas Gibbons - Geospatial mapping using ArcGIS Online to assess social vulnerability and census data changes from Pre-Superstorm Sandy (2012) through 2019 to assess how Long Island's spatial demographics have changed in response to climate change and to determine whether climate change contributes to social injustices for the region. Versions of his maps will be published by SUNY Press in 2021 in the book: *Paumanok Rising Again: Long Islanders Reflect on Climate Change*.

Michaela Re - Geospatial Analysis of Vaccination Exemptions Across the United States. This project intends to answer the following questions:

1. Which regions and/or states, are the most common for children to have religious exemptions from vaccinations in their school districts?
2. Which vaccinations have the highest exemption rates, regionally and throughout the country?

Tyler Schaefer - Geospatial Analysis of Laxworx Hardwall Rebounders, USA. This is the first business research project using a GIS at Sayville HS to perform a sales gap analysis for his dad's business, Laxworx Hardwall Rebounders. The goal is to identify potential clients/ institutions that support Lacrosse to introduce them to the Laxworx product.

Colin Caraher - Using a Drone to Geospatially Analyze Erosion of Smith's Point County Park Beach Pre-/Post- Superstorm Sandy.

Katrina Schieck

Comparative Analysis of Microplastics in Oysters from the East and West Coasts of the USA. Katrina collaborated with Blue Island Oyster Company who provided her with oysters grown out in Estuaries of the Pacific and Atlantic Oceans to measure microplastics uptake in their tissue.

RISE Tech Students of Recognition:

The list of students below were slated to attend the Long Island Science congress and the South Asian American Women's Alliance with each of their projects. Due to the COVID-19 outbreak, all competitions for RISE TECH were cancelled. During the shutdown our students took a thorough initiative to continue their research by reaching out to professionals in the field to assist with their projects.

Emily Hartman-Thoroughly worked on the development of a Mars Rover Repair Prototype. Emily has tirelessly reached out to individuals from the Cradle of Aviation Museum, NASA and Jet Propulsion laboratory in Pasadena California to research feasibility and understand the development of instruments used for sample collection as well as practices in a clean room to prevent cross contamination of microorganisms from planet to planet. She designed and 3D printed a repair arm base using CAD software and will continue to develop her project up until she graduates in June.

Matt Zender, Katherine Zender & Chris Zender (Team Zender!)-Matthew, Katherine and Chris have spent a number of years researching R.O.V. (Remotely Operated Vehicle) development. In collaboration with Rich Conor from the Marine Research group Oceanswide, the team was able to successfully build their own R.O.V. equipped with new technology for data collection. Using CAD software the team had also 3D printed customized brackets for the motors and the camera. On a personal note many of you already know that Matthew was diagnosed with Cancer. I would be remiss if I didn't mention that while Matthew was in treatment, he was adamant about continuing to work on the project to see it come to fruition.

Sarah Hinteman-Sarah came into the RISE Tech Program in 2018. Since then she has been tirelessly working to develop a prototype that could save individuals caught in riptides from drowning. For the past 2 ½ years she has researched the mechanics of Gas and Pneumatic devices and has developed basic prototype concept models using 3D Printing. Sarah has spent the past 2 summers working on this project by identifying methods of propulsion by using elastics and issues with wind resistance. She will be partnering with the Zenders to develop a Mini R.O.V. that could also serve as a possible solution.

Dean Gennosa and Rob Probeyahn-For their Research project Dean and Rob chose to look into minimizing non reclaimable plastic and styrofoam waste from the cafeteria at the high school. Their research led them into a comparison analysis of the cost of water usage to clean trays, glasses and utensils vs. the environmental impact of the disposal of the non-reclaimable material and its long term outcome. During the Pandemic, the team collaborated and experimented with a material derived from Mushrooms known as Mycelium. At home, Dean grew a mycelium sample and determined that despite its cost, if mass produced it could serve as a biodegradable substitute if produced in bulk. This was a great discovery for the team that could lead to rethinking the use of non-renewable trays and utensils in schools cafeterias.

Emily Kroll-Emily is a soccer player who chose to research a solution for comfortable shoes and interchangeable cleats. Prior to the shutdown Emily a TIER I student had begun her planning for the development of her prototype using CAD software. During the shutdown Emily was able to have a Google meet with four female Nike Engineers Erin Tambs; Footwear Developer, Angela Martin; Senior Footwear Designer, Humu Jabbie; Product line manager and Erin Williams; color designer.

This was a very effective meeting since it allowed Emily to consult with professionals in the field of footwear design to understand the process of developing her prototype. This year she intends to improve her prototype applying what she has learned from the engineers.

Will Kretz-Will's research project is based on identifying the correlation between virtual reality environments and assistance with post-traumatic stress disorder. Since 2018 Will has been developing a desert type virtual environment to later be used for assisting those with combat trauma in the Unreal Engine. During the shutdown Will was able to interview Dr. Albert "Skip" Rizzo, Ph.D. Director of Medical Virtual Reality and research professor from the Institute for Creative Technologies Dept. of Psychiatry and School of Gerontology from the University of Southern California. Will had interviewed Skip for over an hour and learned how Virtual Reality can aid to assist individuals with P.T.S.D. by recreating the trauma and allowing them to process the incident. From this Will now has a better framework for his project.