

NEWS RELEASE

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Four Local High School Teams Awarded Scholarships at the 2023 AFRL Challenge Competition at Griffiss Institute



ROME, NY. (April 14, 2023) – The Air Force Research Laboratory Information Directorate (AFRL/RI), in partnership with the Griffiss Institute (GI), is proud to have hosted the 2023 AFRL Challenge Competition, as one of their joint STEM (Science, Technology, Engineering and Mathematics) initiatives, during the week of April 10 – 14, 2023, at the Innovare Advancement Center, in Rome, New York.

Six high schools participated in this competition during spring break, they are as follows:

[Central Valley Academy](#)

Students: Seth Brownrigg and Eamon Miller

Teacher: Kelly Long

[Holland Patent High School](#)

Students: Heather Buchanan-Wise and Nicole Santa Maria

Teacher: Justin Scialdone

[Holy Cross Academy](#)

Students: Cooper Connor and Matthew Gwilt

Teacher: Margaret Cummings

Rome Free Academy

Students: Kenneth Davis and Colyn Seeley

Teacher: Albert Bangs

Westmoreland High School

Students: Cayden Osborne and Dakota Sill

Teacher: Nicholas Darrah

Whitesboro High School

Students: Dominic Marrero and Alex Parlagreco

Teacher: Stephen Costanza



First Place Winners Kenneth Davis and Colyn Seeley from Rome Free Academy.

On Friday, all teams were recognized for their hard work and efforts during the week. Four teams were awarded 1st, 2nd, 3rd and 4th place titles. The 2023 1st place winners Kenneth Davis and Colyn Seeley from Rome Free Academy placed 2nd in the 2022 AFRL Challenge Competition.

The winners of the Annual AFRL Challenge Competition are:

1st Place: [Rome Free Academy](#)

2nd Place: [Holland Patent High School](#)

3rd Place: [Central Valley Academy](#)

4th Place: [Whitesboro High School](#)

Winning teams will be awarded scholarships through their respective NY 529 accounts. Scholarships range from \$500 per student to \$3,000 per student.

The Challenge Competition is an annual competitive STEM initiative for local high school students. It is held during the week when students are on Spring break and it intends to provide a more realistic view of the types of high-tech problems the nation is facing today, and how engineers and researchers go about dissecting and solving these problems. Previous students describe the week and its challenges as a "mental marathon."

Griffiss Institute's President & CEO **Heather Hage** states, "We are proud to support the AFRL Challenge Competition to convene and inspire our area's talented high school students to tackle real and critical technical challenges facing our nation's defense. I am consistently struck by the innovative solutions that emerge from these activities, and hope that our students will maintain the motivation to serve the country and community with their technical talents going forward."

This year's Challenge problem was developed by Christian Brazeau and Nathan McDonald of the AFRL RI Computing & Communications Division. **Nathan McDonald** explained the challenge in more detail, "Deep neural networks (DNN), a popular form of artificial intelligence/machine learning (AI/ML), and alchemy both 'work' despite their lack of a scientific framework. This week's Challenge Competition introduced students to an emerging type of mathematics researchers think will help finally mature AI/ML into a rigorous science. The students wielded hyperdimensional computing (HDC), akin to high school algebra except where x and y are QR code-like patterns instead of numbers, to solve specially created AI/ML video games." This thought-provoking problem allowed students to solve a real world problem using their science and technology skills. "I believe the students rose to the occasion and surprised us all with how well they understood the challenge and worked together to come up with great solutions," said AFRL STEM Lead **Jeff DeMatteis**.

Rome Free Academy's tech teacher **Albert Bangs** comments, "As an educator, I want my students to use critical thinking with authentic experiences. The AFRL Challenge gives our students the chance to use their critical thinking skills in a real-world scenario. In this year's challenge, topics are cutting edge, students are working on Hyperdimensional Computing where they are using neural networks, machine learning, and all of the math, science, and technology skills they learned in school.

Each high school team consisted of a teacher and two students. Each school selects the teacher and students who will be participating, and only one team per school is granted participation. "The challenge was difficult, but making progress towards the solution was very rewarding," said Holland Patent student Heather Buchanan-Wise. Student Nicole Santa Maria from Holland Patent said, "We were given the opportunity to learn things we may not otherwise have been exposed to."

The theme of this year's Challenge Competition is "Using visual patterns as a new approach for human-readable artificial intelligence/machine learning (AI/ML)". This year the Holy Cross Academy team comes to the competition with their teacher Margaret Cummings, who is a past Challenge Competition participant. Ms. Cummings was a student participant in the Challenge during her senior year of high school.

On Friday, April 14, 2023, parents and dignitaries were invited to celebrate the efforts of our local students, including Mayor Jackie Izzo, AFRL officials, and additional award certificates were provided by Assemblymember Marianne Buttenschon's office.

The judge's panel for this year's competition was:

- Mr. Nathan McDonald, *Mathematician, Air Force Research Laboratory, Information Directorate*
- Dr. John Salerno, *Information Institute Program Deputy Director & AI/ML Subject Matter Expert, Griffiss Institute*
- Dr. Jack Lombardi, *Research Electronics Engineer, Air Force Research Laboratory, Information Directorate*

This year's AFRL Challenge Competition was sponsored by Sovena Group, Stewart's Shops, LaRoma's Pizza, Moe's Southwest Grill, Crust Restaurant, Spessos and Market 32. Interested in sponsoring the challenge next year? Visit griffissinstitute.org/contact-us.

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About Griffiss Institute:

The Griffiss Institute cultivates talent and technology that tackles the world's biggest challenges. It does so alongside the United States Department of Defense's Air Force Research Laboratory Information Directorate (AFRL/RI) and an international network of academic, government, and industry partners. Founded in 2002 in the Mohawk Valley region of Upstate New York, Griffiss Institute has origins as an incubator of ideas. With technology transfer at its core, it forges connections and pathways that enable real-life solutions to make their way from the lab bench to commercial uses. Griffiss Institute continues to elevate and develop the next generation of STEM students, professionals, and technologies that enhance our national security. <https://www.griffissinstitute.org/>

About AFRL STEM Outreach Program:

The goal of the AFRL STEM Outreach Program is to foster a new generation of scientists, mathematicians, engineers, and technologists who will one day discover and problem-solve in the nation's defense laboratories and other supporting U.S. companies. To achieve this goal there must be a concerted effort to connect businesses, government foundations, institutions of higher education, professional organizations, schools, teachers, and students. For additional information please visit the STEM initiatives page at www.griffissinstitute.org/AirForceSTEM

About Air Force Research Laboratory Information Directorate:

With headquarters in Rome, NY, the Air Force Research Laboratory Information Directorate (AFRL/RI) research vector develops novel and affordable Command, Control, Communications, Computing, Cyber, and Intelligence (C4I) technologies. RI is recognized as a national asset and leader in C4I. Refining data into information and knowledge for decision-makers to command and control forces is what we do. This knowledge gives our air, space, and cyberspace forces the competitive advantage needed to protect and defend this great nation. <https://www.afrl.af.mil/>