Carnegie Mellon University

Office of the Assistant Vice Provost for Educational Outreach

K-12 Educational Outreach Newsletter - November 2021

Be the first to hear about CMU K-12 Educational Outreach news and events by subscribing **to our newsletter!**

Greetings Carnegie Mellon University campus contacts! The Office of the Assistant Vice Provost for Educational Outreach has compiled the information for this newsletter to serve as a new method for collaboration across campus partners. We hope that you will enjoy reading about the upcoming events and details from programs, departments, schools and colleges at our university and how they're connecting with the K-12 community! Subsequent issues of this newsletter will be sent out to our contacts on a bi-monthly schedule as we receive news and updates.

Should you choose to be removed from this periodic newsletter, we will be sad to see you go, but you may do so by scrolling to the bottom of this newsletter, and selecting to either update your preferences or unsubscribe.

November 2021 Headlines

- LEAP Program for Pgh High School Students
- November 2021 Gelfand Outreach
- Discovering Cognitive Psychology at the YMCA
- Arts Greenhouse: An Arts and Humanities Education Initiative at CMU
- College of Engineering Outreach Initiatives
- New Virtual Robot Curriculum - Coding and Computational Thinking with Virtual SPIKE Prime
- Project Ignite Student Application Open!

- picoCTF Launches intro-level CTF in January
- CMU Hosts Tech Nights for students interested in Computer Science!
- ETC Outreach and Engagement Fall 2021
- LGC Tutoring
- Physics Partners with Local Teachers
- Middle School Girls Use RoboCamp with Virtual SPIKE Prime for CMU SWE Event

LEAP Program for Pittsburgh High School Students

We are happy to announce the upcoming launch of the new LEAP (Leading, Empowering, Aspiring, Persevering) program. LEAP will empower Pittsburgh high-school students to deepen their critical thinking and leadership skills through hands-on workshops in the arts, humanities, and social sciences. A collaboration with City Charter High School, LEAP will offer

November 2021 Gelfand Outreach

Students in grades K-9 are invited to participate in Gelfand Outreach workshops which are held on several Saturdays during the academic year and week-long session during the summer. Programs are developed by Carnegie Mellon University faculty, students, and staff; all are designed to be rigorous, educational, STEM focused, hands-on and fun! Over 100 students participated in the fall In-person classes on October 9 and November 6, 2021.

The Spring 2022 dates are:

January 29th

February 19th

March 19th

April 2nd

Discovering Cognitive Psychology at the YMCA

The CMU Psychology Graduate Outreach Program has put together a series of workshops about different aspects of cognitive psychology: perception, attention, memory and inhibition. Through games, illusions, and fun examples, we will guide 9- to12-year-olds with the Y-Creator Space after-school program in learning about how our brains take in and process information.

Arts Greenhouse: An Arts and Humanities Education Initiative at CMU

The Fall 2021 academic session ushered in many new developments at Arts Greenhouse (AG). The creative learning initiative housed in Carnegie Mellon University (CMU), continued its work with Schiller STEAM Academy for the third year and established a new partnership with Manchester Academic Charter School Middle School. Two partnerships are also lined up for January next year, one of which will be Homewood Children's Village, AG's continuing partner for the second year. AG also piloted a new curriculum for its partner schools (grades five through eight) this year. The curriculum titled *Making Myself* promotes a deeper understanding of self-identity and the ability for self-representation through poetry, illustration, music, and storytelling. Making Myself was created using PA Standards for Arts and Humanities, and will also be taught to classes in spring, culminating in a print and multi-media anthology of student work.

Another exciting development that took place this fall, was the introduction of Redrafting the Map – a community advocacy research project using Community-Based Participatory Inquiry, Arts-Based Research, and Community-Sourced GIS Mapping. By allowing students to curate

writing, and map-making skills. Students' final research projects will be published through Carnegie Mellon University platforms at the end of the course.

In other news, Arts Greenhouse also welcomed two new members to its team this session, Emma Fries and Sana Hussain. Emma, who is the Head Instructor at the program, is responsible for the innovative additions to the curriculum this year. She comes from a background in Arts Education and has taught multi-disciplinary arts curricula in traditional and out-of-school time settings. Sana joined the team as the first Media Assistant Intern at AG. She has previously worked in content and research-related positions in different industries including education, non-profit, and publishing, and is working on AG's tech, media, and professional writing guidelines. Looking ahead to January 2022, Arts Greenhouse is launching another creative program of study for students in grades seven through eight. This curriculum will be centered around the graphic novel genre, and employ art mediums like drawing, cartooning, and narrative design to intersect with issues of self-identity, the environment and nature, and advocacy. Also in the pipeline for Spring 2022 are additional internship opportunities for undergraduate students at CMU. More information about these opportunities will soon be available on the AG website and social media.

Currently, AG is serving about 100 students in Pittsburgh and running four to five classes per week. It features both in-person and remote programming both in-school and out-of-school time; leading creative learning research with community partners; and offering teaching and internship opportunities for teaching artists and college students. For more information about AG's programs and activities please visit our website and Facebook.

College of Engineering Outreach Initiatives

The College of Engineering is invested in supporting K-12 STEM outreach in order to not only better develop community relations with the Pittsburgh region, but to also create opportunities for CMU students to engage in regional volunteer work. Our aim is to assist with current programs in Pittsburgh that serve this educational outreach need, and to develop new programs that specifically target gaps in existing program availability to underrepresented groups and minority populations.

Moving 4th into Engineering -- Every Saturday morning between October 23 and November 13, a group of 50 4th graders worked with students from CMU's College of Engineering to learn about the variety of engineering principles that go into the process of building Rube Goldberg machines. Their machines were constructed using an assortment of household items in conjunction with some supplies that were provided in mailed kits. All attendees built their machines at home during the first 3 virtual sessions, with the final week being reserved for a celebration of everyone's hard work, featuring videos of the homemade Rube Goldberg machines in action.

Classroom Visits -- Student teams from all around the College of Engineering have begun visiting

groups visited the Mt. Ararat Community Activity Center and the Family Resources facility in Natrona Heights, delivering lessons and hands-on activities about things like water filtration, prosthetics, and payloads.

Clearance Initiatives -- The office for DEI and the ECE Department have been working on clearancing initiatives that will allow for increasing capacity for the college of engineering to engage in K-12 outreach. In addition, the ECE Department will be supporting 18-991 PhD Teaching Internships to be satisfied by doing K-12 outreach with local schools and out of school time providers in the Pittsburgh region.

New Virtual Robot Curriculum
Coding and Computational Thinking with Virtual SPIKE Prime

After several months of hard work, our team is proud to share a version of our *Coding and Computational Thinking with SPIKE Prime* curriculum which is fully enabled through an embedded virtual robot simulation and programming environment.

The *Coding and Computational Thinking with **Virtual** SPIKE Prime* curriculum is broken down into 8 units: Getting Started, Programming the Hub, Robot Movement, Wait Until & Sensors, Loops, Discrete Decisions, Capstone: Subterranean Challenge, and Continuous Decisions. Over 75 programmable virtual environments are embedded throughout, allowing students to learn big ideas in robotics, coding, computational thinking, and mathematics.
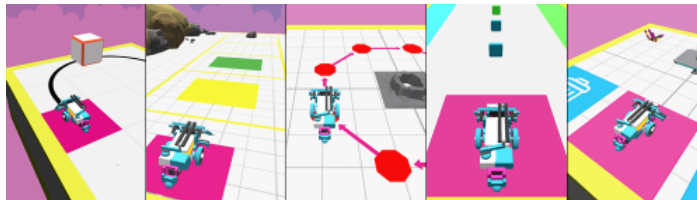
The virtual robot itself contains simulated versions of the programmable motors, sensors, and other components. A built-in sensor dashboard allows students and teachers to quickly inspect the values the robot sees, speeding up the process of developing and troubleshooting their code.

Our new virtual-enabled curriculum takes a just-in-time and embedded approach. As students make progress through the course (which the CS2N Learning Management System keeps track of), CS2N ensures sure that the student is presented with the corresponding instructions, virtual environment and programming interface. Better still, there is no file or submission management - CS2N automatically saves student code progress with each and every activity so that they never lose it and teachers never have to track it down.

Virtual activities can be run as many times as the student needs to foster their understanding, and their completion is automatically awarded so that students know when to move on. We have a free sample from the curriculum - the Virtual SPIKE Prime - Iris Rover Challenge, that teachers and students can try out to get a feel for how everything works. These materials are a portion of the materials from the full Getting Started and Robot Movement badges.

Project Ignite is an interdisciplinary project-based 10-week program that takes place on Sundays in the Spring on Carnegie Mellon's campus, where high school students work in groups of 4 to 7 to research, design, and build large-scale projects with Carnegie Mellon University students who support them to actualize their wildest ideas.

We at Project Ignite are excited to announce that our high school application for 2021 spring is now open! We have projects in tech, science, and the arts with topics ranging from environmental technology, AI to game design. Teams can shape these projects in any direction they want, and you can even propose your own project!

Project Ignite is a great way to build your skills, including communication, teamwork, leadership, time management, budgeting, critical thinking, and problem-solving. You'll practice them all at once in Project Ignite. Students can gain expertise and broaden their horizons by being exposed to unfamiliar fields, gain hands-on project experiences of research, design, and prototyping outside the scope of typical schoolwork. It's also a great way to make friends and network by building amazing projects together with CMU students and your brilliant fellow high schoolers from all over Pittsburgh. It's cool, fun, and absolutely rewarding - do something unique and creative, inspire each other, discover, explore, and pursue your dreams.

The application can be found by the link here. Any student can apply, regardless of experience. The application should take less than 15 minutes, and students who apply earlier have a better chance of being placed on their top project choice, so apply soon! A recorded information session going over the program and timeline has been added to our website!

If you have any questions, please email us at projectignitecmu@gmail.org. We look forward to having you participate in Project Ignite!

picoCTF Launches Intro-Level CTF in January

picoCTF returns to their roots with a truly introductory level CTF to learn, practice, and repeat. January 10- February 4, 2022.

https://picoctf.org

CMU Hosts Tech Nights for students interested in Computer Science!

The CMU School of Computer Science is excited to announce that our TechNights enrichment program, which aims to expand diversity of interest in computing among middle school students, is up and running for November 2021!

While the workshops have traditionally been held on campus, this semester our program will consist of fun and age-appropriate interactive videos on a variety of computer science topics taught by members of the Carnegie Mellon Community. These videos will be uploaded to our YouTube channel weekly on Mondays, beginning November 8.

You can learn more on our website here: https://www.cmu.edu/scs/technights/

Please let families with middle school students know about this free computer science enrichment resource! We are here to answer any questions you may have.

Here is a preview of what's on deck for November 8:

When you use the shuffle function on your music playlist, the next song you get will be random -- but what does this mean? And how can a computer be 'random'? This TechNights session will cover what randomness is and where we can find it in the world. Through examples and exercises, we'll learn how a computer can simulate randomness. Students will walk through the math of a simple, pseudorandom number generator and use Python to generate a "random" art piece with the help of our friend Mochi the turtle. ☺

Carnegie Mellon University
Entertainment Technology Center

ETC Outreach and Engagement Fall 2021

Eradicate Hate Summit in Oct. The poster focused on CMU ETC operational game Prototypes developed and deployed within just one semester to address hate in various forms, from prejudice to misunderstanding and microaggressions. The three examples are all available and free to play.

Mocking Birds - Interactive video experience to raise awareness of more subtle forms of racism and their impacts.

Prism - Helps neurotypical children empathize with those on the autism spectrum

Blindspot - 2D web-based game to raise awareness and inspire action to counteract the negative impact of microaggressions on campus for college students.

In the K-12 space, the ETC collaboration between Prof. Anthony Rowe and ECE has led to a number of XR worlds being generated in middle school classrooms across the region. The latest being 3D jack-o-lantern patches.

The ETC will be hosting an event in partnership with Remake Learning to share and discuss Transformational Games.

As part of the Moonshot Grants from Remake Learning, the ETC is half way through a series of sessions with local educators exploring the "Creative Chaos" of our department.

Finally, there are two transformationally focused student based projects currently in development through the generous support of the Grable Foundation and Claude Worthington Benedum Foundation.

WanderMath: WanderMath is an Entertainment Technology Center (ETC) project making an Augmented Reality (AR) experience inspired by Math Walks, to help 4th and 5th graders engage in open-ended math adventures.

Molten Corps: Molten Corps is a team project that aims towards creating realistic and historically accurate experiences using Augmented Reality technology in partnership with Rivers of Steel.

Carnegie Mellon University
Leonard Gelfand Center

LGC Tutoring is Hiring!

LGC Tutoring is hiring students to work as tutors, TA's, and mentors in local schools and afterschool programs!

Sciences
Mathematics
Writing
STEAM Learning
Homework Help
English as a Second Language
Arabic
Russian
Spanish

Positions available M-F, 7:00am - 6:00pm with flexibility for academic schedules. All majors are welcome to apply!

Translate ▼   RSS

Carnegie Mellon University
Mellon College of Science | **Physics**

Physics Partners with Local Teachers

On June 28 and 29, 2021, high school physics teachers from around the Pittsburgh region virtually attended the inaugural Physics Teacher Professional Development Program, a new outreach program designed to provide participants with resources and guidance to inspire more students to pursue physics. Teachers received information on educational and career possibilities for physics students and heard presentations about research happening at CMU. Following this, some of the teachers attended an in-person social gathering on campus on October 29 and were taken on tours of lab facilities, shown physics classroom demos, and had dinner with physics professors and graduate students.

The Department of Physics also has a collection of lecture modules geared towards school students across all age groups. These will be presented by CMU professors either in-person or remotely and teachers may directly contact the professor to request a lecture at their school.
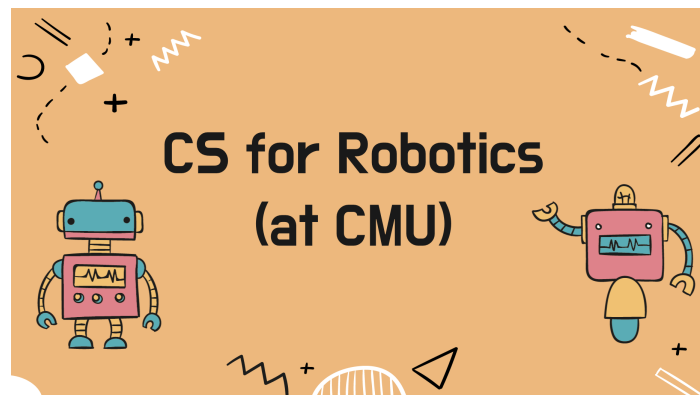
Middle School Girls Use RoboCamp with Virtual SPIKE Prime for CMU SWE Event

By Catherine Porter

On October 14th, 2021, Carnegie Mellon University's Society of Women Engineers hosted Middle School Day, an annual outreach event. This virtual event invited middle school girls from the Pittsburgh area to participate in workshops to experience an engaging day of learning about engineering. Volunteers from CMU's faculty, staff and students hosted workshops that covered a variety of STEM subjects such as computer science, biomedical engineering, environmental engineering, and more.

Ananya Rao, a CMU CS graduate student, and Catherine Porter, a curriculum developer with the Carnegie Mellon Robotics Academy teamed up to host an engaging Computer Science workshop for

Translate ▼
RSS

Ananya discussed how her studies relate to everyday tasks and gave a short presentation about medical robotics, search and rescue robotics, and lunar robotics. While all of these robots help people in various ways, it takes a programmer to be able to tell the robots what to do.

The workshop was supported by RoboCamp with Virtual SPIKE Prime, a curriculum developed by the Carnegie Mellon Robotics Academy that teaches basic programming, robotics, and other STEM concepts at an introductory level. The curriculum offers a virtual robot that can be programmed in a lunar environment. All the activities in it are themed after CMU's Iris Rover, which brought the workshop into full circle and created a meaningful learning experience for the middle school girls.

"It was truly worthwhile hosting this workshop with Ananya. It helped girls become intrigued with computer science and they thoroughly enjoyed programming the virtual robot. I am grateful that Carnegie Mellon's Society of Women Engineers provides these kinds of opportunities to young girls so that we may inspire and motivate them to enjoy STEM," said Catherine Porter.

Carnegie Mellon University
Biomedical Engineering +
Leonard Gelfand Center

BME Modules for HS Audiences

Did you know? The Gelfand Center and Biomedical Engineering partner to provide educational opportunities for Carnegie Mellon undergraduate students who spend time learning more about a topic related to BME while they develop an informative module for HS students. Topics include but are not limited to immunology [League of Immuno-Legends!] and artificial organs. The work began as a service-focused course taught by Conrad Zapanta and Judy Hallinen during the summer of 2020 and has continued with additional students working to complete the modules and develop new topics for the younger learners.

Other educational media contributed by faculty and students from a variety of departments on campus can also be found on the Gelfand Center site.

CMU K-12 Educational Outreach Directory

The Alice Project

animations, build interactive narratives, or program simple games in 3D.

Eric Brown

Director

[The Alice Project](#)

ewbrown@andrew.cmu.edu

Arts Greenhouse

Shun-Sho Carmack

Program Manager

Baker Hall

dcarmack@andrew.cmu.edu

Career & Professional Development Center

The CPDC empowers students and alumni to optimize their professional and life potential through career exploration, experiential learning, and connections with employers and opportunities.

Pati Kravetz

Associate Director for Experiential Learning & Student Employment

[Career & Professional Development Center](#)

CPDC Advising Center, West Wing, 2nd Floor

pk13@andrew.cmu.edu

412-268-7052

Center for Architecture Explorations

Center for Architecture Explorations

The **Center for Architecture Explorations (CAE)** develops programs that serve unique Kindergarten-professional architectural education paths. The CAE builds on our School's experience with youth education, university service learning projects, engagement with the architectural practice, and academic research to explore ways we can support architectural education pedagogy and foster equity and diversity in building industry professions.

Jenna Kappelt

Manager of Outreach Programs

jkappelt@andrew.cmu.edu

College of Engineering

Carnegie Mellon University College of Engineering

Megan Fahey
Assistant Director of Strategic Programs
mfahey@andrew.cmu.edu

Stefanie Garcia
Outreach Coordinator for Diversity, Equity, and Inclusion
Electrical and Computer Engineering
stefanig@andrew.cmu.edu

Computer Science Academy

CMU CS Academy is a project in Carnegie Mellon University's School of Computer Science that has the goal of developing a novel, world-class, online, interactive high school computer science curriculum that is entirely free.

Erin Cawley

ccawicy@andrew.cmu.cdu

Department of History

LEAP Program

Nico Slate

History Department - Professor

slate@cmu.edu

Carnegie Mellon University

Mellon College of Science | **Physics**

Department of Physics

Physics Outreach

John Alison	**Diane Turnshek**
Physics Department - Director of Outreach	Physics Department - Special Lecturer
johnalison@cmu.edu	dianet@andrew.cmu.edu
Wean Hall 7420	

ECE Outreach

ECE Outreach is program run by the Electrical and Computer Engineering department of Carnegie Mellon University that aims to provide high school and middle school students with opportunities to learn about and explore engineering through short lectures and hands-on labs. Run with the help of several volunteer undergraduate and graduate students, professors, and staff at CMU. All the materials are available on our website for free.

eceoutreach@gmail.com
http://eceoutreach.ece.cmu.edu/

Entertainment Technology Center

Providing leadership in education and applied research that combines technology and art, to explore learning, storytelling, innovation and entertainment, and to create experiences that educate, engage and inspire.

Imagine working with some of the smartest, most creative people on the planet to produce interactive media that's entertaining and engaging. Carnegie Mellon University's Entertainment

individuals are challenged to explore, experiment and collaborate to create games, designs and stories using the latest technologies.

John Balash

Director of Educational Engagement

jbalash@andrew.cmu.edu

Mellon College of Science

Mentoring High School Students Towards Summer Session

William Alba

MCS - Assistant Dean for Diversity

alba@cmu.edu

National Robotics Engineering Center

Carnegie Mellon Robotics Academy

Jesse Flot

Co-Director

jbflot@andrew.cmu.edu

Office of the Assistant Vice Provost for Educational Outreach (AVPEO)
Leonard Gelfand Center

The Leonard Gelfand Center works with faculty, students and staff through on-campus and community-based activities that improve educational opportunities, especially in the areas of science, technology, engineering and mathematics education for youth. The Leonard Gelfand Center for Service Learning and Outreach was endowed by alumnus Mark Gelfand to create and strengthen partnerships with local schools and education providers.

Dr. Judith Hallinen

AVPEO

Director of the Leonard Gelfand Center for Service Learning and Outreach

hallinen@cmu.edu

412-268-1498

- Supports faculty Broader Impacts work
- Point of contact for PA Act 48, K-12 educator PD
- Designs & implements K-12 programs
- Advises StuCo (Student College)
- Consults with CMU students wishing to pursue careers in K-12 education

Kristin Lavery

Assistant Director of the Leonard Gelfand Center for Service Learning and Outreach

klavery@andrew.cmu.edu

412-268-6819

- Business Manager & Department Initiator for AVPEO/LGC
- StuCo Course Administrator
- Road to Research (R2R) Programs
- Gelfand Outreach database developer
- STEM Career Explorations and 360 Lab Tours project manager

Pamela Fenner

Program Director of the [Leonard Gelfand Center for Service Learning and Outreach](#)

pjp@andrew.cmu.edu

412-268-1863

- [Gelfand Outreach](#) Program Director for Saturday and Summer programs
- Creates schedule and calendar for Gelfand Outreach programs
- Organizes and provides support for on and off-campus STEM outreach activities
- Manages GO Teaching Assistants and office student employees

Miriam Wertheimer

Program Administrator of the [Leonard Gelfand Center for Service Learning and Outreach](#)

mwerthei@andrew.cmu.edu

412-268-6544

- Gelfand Outreach Program Coordinator
- [K-12 LGC Tutoring Coordinator](#)

Office of the Provost - Simon Initiative

Named for the late Nobel and Turing Award laureate and CMU Professor Herbert A. Simon, the Simon Initiative harnesses a cross-disciplinary learning engineering ecosystem that has developed over several decades at Carnegie Mellon. The initiative's goal is to measurably improve student learning outcomes.

Maggie Hannan

Associate Director of K-12

mqhannan@andrew.cmu.edu

412-841-4033

[BEST](#) - Bioinformatics Education for STudents & [Project GCode](#)

Cheryl Begandy

Director, External Relations

begandy@psc.edu

412-268-5129

Vivian Benton

Communications/Publications Project Manager

benton@psc.edu

---

picoCTF / CyLab Institute in CIT

Megan Kearns

Project Administrator

mkearns1@andrew.cmu.edu

Pittsburgh Supercomputing Center

Pittsburgh Supercomputing Center is a joint effort of Carnegie Mellon University and the University of Pittsburgh. Established in 1986, PSC provides university, government and industrial researchers with access to several of the most powerful systems for high-performance computing, communications and data storage available to scientists and engineers nationwide for unclassified research. PSC advances the state of the art in high-performance computing, communications and data analytics and offers a flexible environment for solving the largest and most challenging problems in computational science.

Project Ignite

Mahima Pannala

Vice President of Communications for Project Ignite

mpannala@andrew.cmu.edu

Psychology Graduate Outreach Program

Patience Stevens

pstevens@andrew.cmu.edu

Thank you to our contributors!

This newsletter is a collaborative project across CMU schools, colleges, departments, offices, programs and student organizations with information compiled and shared by Kristin Lavery of the Office of the Assistant Vice Provost for Educational Outreach and the Leonard Gelfand Center with the CMU campus community. We hope to expand our reach with each issue as this project grows and continually improves for our audience. If you have questions or comments about the individual articles, please reach out to the program contact directly. If you would like to add an additional CMU K-12 Educational Outreach directory listing or news item for subsequent issues of this newsletter, please contact Kristin Lavery.

Subscribe   Past Issues   Translate ▾   RSS