



HPC	ARTIFICIAL INTELLIGENCE / MACHINE LEARNING	ROBOTICS / AUTONOMOUS VEHICLES	QUANTUM	CYBERSECURITY / PRIVACY	5G, WIRELESS SPECTRUM, NETWORKING & COMMUNICATIONS	CLIMATE CHANGE / GREEN ENERGY & IT	DIGITAL HEALTH	STEM / WORKFORCE & IT	STEM / WORKFORCE RESOURCES & OPPORTUNITIES	NITRD NEWS	UPCOMING CONFERENCES / WORKSHOPS / WEBINARS
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NITRD News Brief

We are pleased to continue NITRD's News Brief that offers insight into the activities NITRD's member agencies are conducting to achieve the Nation's priorities through the lens of the public-facing news sources. These are divided into networking and information technology topics that have been identified as of great importance for improving Americans' daily lives.

For ease of access, under NITRD's logo, the title of each section is listed as a link to that section. The titles of the articles under the section's heading are links that provide immediate access to the news article listed. We hope you find this informative and helpful in your daily activities.

Do you know someone who would like to receive NITRD's weekly news brief? They can email NITRD's IT aficionados at nco@nitrd.gov and voilà they will receive the news brief with the cool technology articles each week!

HPC

INCITE program awards supercomputing time to 56 projects to accelerate science and engineering research

...The U.S. Department of Energy's (DOE) Office of Science announced allocations of supercomputer access to 56 high-impact computational science projects for 2023 through its Innovative and Novel Computational Impact on Theory and Experiment (INCITE) program. These awards, which will pursue transformational advances in science and engineering, account for 60% of the available time on the leadership-class supercomputers at DOE's Argonne and Oak Ridge national laboratories. The projects will support a broad range of large-scale research campaigns to advance knowledge in areas ranging from astrophysics to sustainable energy technologies to materials design and discovery...
Argonne National Laboratory - Nov 14, 2022

Artificial Intelligence / Machine Learning

Exposure and Experience – NSWC Dahlgren Division Employees Participate in AI/ML Hackathon

...At Naval Surface Warfare Center Dahlgren Division (NSWCDD), hackathons hosted at Dahlgren's Innovation Lab (iLab) provide the building blocks for positive hacking skills for scientists and engineers. The fourth hackathon of the year was held Oct. 25 through Oct. 27 at the iLab. The accelerated artificial intelligence (AI) and machine learning (ML) exercises generated with NVIDIA the perfect environment for NSWCDD employees to learn and gain exposure to AI and ML applications. This hackathon focused on the AI/ML computing environment, building algorithms and applying the environment to image processing and object detection, which is a technically challenging area of expertise...
Navy.mil - Nov 10, 2022

Argonne scientists promote FAIR standards for managing artificial intelligence models

...In a new study, Eliu Huerta and his colleagues have articulated a new set of standards for managing AI models. Adapted from recent research on automated data management, these standards are called FAIR, which stands for findable, accessible, interoperable and reusable. To meet the needs of a diverse community of users, Huerta and his colleagues combined a unique suite of data management and high performance computing platforms to establish a FAIR protocol and quantify the "FAIR-ness" of AI models. The researchers paired FAIR data published at an online repository called the Materials Data Facility, with FAIR AI models published at another online repository called the Data and Learning Hub for Science, as well as with AI and supercomputing resources at the Argonne Leadership Computing Facility (ALCF). In this way, the researchers were able to create a computational framework that could help bridge various hardware and software, creating AI models that could be run similarly across platforms and that would yield reproducible results...
Argonne National Laboratory - Nov 10, 2022

DARPA/US Army/USAF supported research ensuring AI works with the right dose of curiosity

...Curiosity drives artificial intelligence to explore the world, now in boundless use cases — autonomous navigation, robotic decision-making, optimizing health outcomes, and more. Machines, in some cases, use "reinforcement learning" to accomplish a goal, where an AI agent iteratively learns from being rewarded for good behavior and punished for bad. In the pursuit of making AI agents with just the right dose of curiosity, researchers from MIT's Improbable AI Laboratory and Computer Science and Artificial Intelligence Laboratory (CSAIL) created an algorithm that overcomes the problem of AI being too "curious" and getting distracted by a given task. Their algorithm automatically increases curiosity when it's needed, and suppresses it if the agent gets enough supervision from the environment to know what to do. ... The research was supported, in part, by DARPA Machine Common Sense Program, the Army Research Office by the United States Air Force Research Laboratory, and the United States Air Force Artificial Intelligence Accelerator.
MIT News - Nov 10, 2022

IARPA \$9.2M grant to UChicago computer scientists will improve graph analytics

...With a \$9.2 million grant from Intelligence Advanced Research Projects Activity (IARPA), Prof. Andrew A. Chien will lead a team of University of Chicago computer science researchers building the UpDown System—a new approach that could speed up graph analytics a hundredfold. Graph analytics is at the heart of some of today's most exciting computational applications in science and technology. The organization of data into graphs—large networks of people, molecules, or locations connected by their interactions and relationships—can unleash powerful insights for e-commerce, scientific discovery, social networks, recommendation and search engines, and fraud or anomaly detection. The effort will reinvent computer architecture, dramatically increasing efficiency and scalability for graph computing. Such a scope will be necessary to efficiently analyze the world's largest graphs from social media, financial transactions, or Internet of Things device networks that contain billions or trillions of vertices and edges. The UpDown architecture enables flexible graph representation and programmable intelligence to move it within the system. The UpDown accelerator resides between the CPU and memory, empowering an application to create "software-defined hardware" that customizes how data is encoded, interpreted, and moves through a node. Programmers can write software to increase performance for specific applications, or draw upon machine learning to optimize the flow of data through the system...
UChicago News - Nov 9, 2022

Robotics / Autonomous Vehicles

NIWC PAC and Carderock Engineers Collaborate on Drone Tether Management System

...Naval Information Warfare Center (NIWC) Pacific (PAC) and Naval Surface Warfare Center, Carderock Division engineers conducted tests of a drone tether management system at Carderock's 8 feet by 10 feet Subsonic Wind Tunnel. Tethered aerial systems come in many forms and are being adopted by the U.S. Navy for different missions. The aircraft tested in Carderock's wind tunnel was a multirotor configuration, one of the most common. Commercial systems exist, but many are not adequate for naval ship integration due to insufficient tether control systems. Instead of pulling on the drone with a constant amount of tension, the tether hangs slack, which reduces the amount of force pulling down on the drone. You get better performance, better payload capability and other advantages...

Navy.mil - Nov 10, 2022

Bipartisan Infrastructure Law investments lead to robotic DNA samplers to track biological threats in US waters

...A cooperative agreement between USGS and the Monterey Bay Aquarium Research Institute (MBARI) will develop portable robotic DNA samplers capable of independently monitoring for living threats and advance detection of invasive species, pathogens and parasites which cause ecological and economic damage to aquatic systems. Building on earlier work, researchers with the USGS have launched a new program called Rapid eDNA Assessment and Deployment Initiative and Network (READI-Net), which tests for DNA fragments in the water known as environmental DNA (eDNA). READI-Net will enhance early detection and rapid-response methods to help resource managers contain and control aquatic biological threats. The USGS has successfully used eDNA methods and robotic samplers as an early-detection strategy for biological threats to important aquatic systems. Robotic samplers can help researchers search for hard-to-find organisms by detecting their DNA in the water. The current MBARI-designed sampler, called the Environmental Sample Processor or ESP, was built to be a sturdy 400-pound machine for use in rugged marine environments. Scientists need a more compact and nimble design for easier deployment in freshwater rivers and streams. As part of the new agreement, the USGS and MBARI will design a new robotic eDNA sampler. This new device will be smaller and lighter, with an easy-to-use computer to facilitate deployments and wireless connectivity so researchers can control sampling remotely. The eDNA robot will be programmed to take samples frequently and at any time of day and will collect large amounts of data that must be managed and analyzed...

USGS - Nov 9, 2022

Quantum

New measurements quantifying qudits provide glimpse of quantum future

...Using existing experimental and computational resources, a multi-institutional team has developed an effective method for measuring high-dimensional qudits encoded in quantum frequency combs, a type of photon source, on a single optical chip. The "qudit," the lesser-known cousin of the qubit, can carry more information and is more resistant to noise — key qualities needed to improve the performance of quantum networks, quantum key distribution systems and, eventually, the quantum internet. The "d" in qudit stands for the number of different levels or values that can be encoded on a photon. Traditional qubits have two levels, but adding more levels transforms them into qudits. The U.S. National Science Foundation-supported researchers characterized an entangled pair of eight-level qudits, which formed a 64-dimensional quantum space — quadrupling the previous record for discrete frequency modes...

National Science Foundation - Nov 14, 2022

Cybersecurity / Privacy

National Security Memorandum on on Strengthening the Security and Resilience of United States Food and Agriculture

...The food and agriculture sector is extensive, interconnected, diverse, and complex. Designated as critical infrastructure and primarily owned and operated by private sector and non-Federal entities, food and agriculture systems and supply chains are vulnerable to disruption and damage from domestic and global threats. Chemical, biological, radiological, and nuclear (CBRN) threats that may result in high-consequence and catastrophic

incidents affecting the food and agriculture sector. Other threats that may result in high-consequence and catastrophic incidents include pandemics impacting the sector's critical infrastructure and essential workforce, consequences of climate change, and threats in the cyber domain, such as disruption to systems as a result of increasing information technology and operational technology convergence and intellectual property theft. The evolving threat environment requires the sector and its essential workforce to better prepare for and respond to incidents with broad impacts on our national and economic security....

The White House - Nov 10, 2022

Winners Announced in First Phase of UK-US Privacy-Enhancing Technologies Prize Challenges

...The United Kingdom and the United States governments have announced the 12 winners of the first phase of the U.K.-U.S. privacy-enhancing technologies (PETs) prize challenges. Competing for cash prizes from a combined U.S.-U.K. prize pool of \$1.6 million (£1.3 million), participants are developing solutions that will enable artificial intelligence models to be trained on sensitive data without organizations having to reveal, share or combine their raw data. Winning challenge solutions will be showcased at the second Summit for Democracy, which President Joe Biden plans to convene in the first half of 2023. The U.S. challenge is funded and administered by the U.S. Department of Commerce's National Institute of Standards and Technology (NIST) and the U.S. National Science Foundation (NSF)...

National Institute of Standards and Technology - Nov 10, 2022

DHS S&T Awards Funds to Arlington, MA, Startup Developing Anomaly Detection Systems for Securing Soft Targets

...The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) announced a Phase 1 Other Transaction award of \$198,000 to Laurretta AI, a company based in Arlington, MA, to customize its commercial artificial intelligence solution and create an adaptable anomaly detection system to secure soft targets. The goal of this project is to offer a layer of safety for those locations that enable quick effective action in the event an unknown threat presents itself. Laurretta AI has proposed to adapt its existing technology to leverage activity recognition and tracking. The refinement to the AI solution will capture multiple data points per subject to minimize false alerts and address the diverse requirements and situational and physical limitations of soft target locations. DHS is committed to using cutting-edge technologies and scientific talent in its mission to make America safer. Soft targets are easily accessible to large numbers of people and have limited security or protective measures in place making them vulnerable to attack...

Homeland Security - Nov 10, 2022

Montana State receives \$4.47 million DHS award for improving cybersecurity

...Building on nearly five years of helping the Department of Defense and the Department of Homeland Security improve methods for resisting cyberattacks, Montana State University is leading a new effort to reduce software vulnerabilities across a wide range of systems. The project, funded by a \$4.47 million, three-year DHS contract award, will draw on advanced computing and data science techniques to develop innovative tools for identifying computer code that could be exploited by cybercriminals or foreign enemies. The team, which includes a total of eight faculty at MSU, Idaho State University, Washington State University and Rochester Institute of Technology, will create computer models that can analyze software throughout the development process, a process known as quality assurance, and identify code that could be hacked once the software is used...

Montana State University - Nov 14, 2022

5G, Wireless Spectrum, Networking & Communications

5 Things to Know About How SWOT Will Look at the World's Water

...On Dec. 12, NASA will launch the Surface Water and Ocean Topography (SWOT) satellite into Earth orbit from Vandenberg Space Force Base in California atop a Falcon 9 rocket. The mission is a collaborative effort between NASA and the French space agency Centre National d'Études Spatiales (CNES) – with contributions from the Canadian Space Agency (CSA) and the UK Space Agency – that will survey water on more than 90% of the planet's surface. The satellite will measure the height of water in Earth's freshwater bodies and the ocean, providing insights into how the ocean influences climate change; how a warming world affects lakes, rivers, and reservoirs; and how communities can better prepare for disasters, like floods. Here are five ways that SWOT will change what we know about water on Earth: (1) SWOT will survey nearly all water on Earth's surface for the first time. SWOT will help researchers track Earth's water budget – where the water is today, where it's coming from, and where it's going to be tomorrow. This is key to understanding how water resources are changing, what impact those changes will have on local

environments, and how the ocean reacts to and influences climate change. (2) SWOT will see Earth's water in higher definition than ever before. Ground and satellite technologies currently provide data on only a few thousand of the world's largest lakes, but SWOT will expand that number to over a million lakes larger than 15 acres...

National Aeronautics and Space Administration - Nov 15, 2022

NOAA's newest satellite heads toward orbit

...NOAA's Joint Polar Satellite System-2 (JPSS-2), the third in a series of five advanced polar-orbiting satellites, will join its predecessors, Suomi NPP and NOAA-20, as they circle the globe 14 times a day, and provide a continuous stream of data used for weather forecasting, including extreme — potentially deadly — events. JPSS-2 will be renamed NOAA-21 when it reaches its final "afternoon" orbit, where the satellite will collect local observations of the mid-latitudes and tropics during the afternoon and overnight. Together, NOAA's newest polar-orbiting and geostationary satellites provide high quality data and imagery to help emergency managers better prepare for and respond to dangerous storms. Launching with JPSS-2 — as a rideshare on the satellite — was NASA's Low-Earth Orbit Flight Test of an Inflatable Decelerator (LOFTID) technology demonstration. After JPSS-2 safely reached orbit, LOFTID, which is a type of heat shield, began a demonstration of its ability to slow down and survive re-entry in the atmosphere. NOAA is an important partner for NASA in providing essential data about climate change, weather prediction and environmental modeling for the benefit of citizens both in the U.S. and around the world...

National Oceanic and Atmospheric Administration - Nov 10, 2022

CAPSTONE Will Soon Meet the Crux of Its Deep Space Route to the Moon

...On Nov. 13, CAPSTONE will reach the Moon and become the first spacecraft to enter into a unique, elongated orbit that will support NASA's Artemis missions. This microwave oven-sized satellite, weighing just 55 pounds, will be the first CubeSat to fly to and operate at the Moon. The CubeSat serves as a pathfinder for Gateway, a Moon-orbiting space station that is part of NASA's Artemis program. CAPSTONE's mission will help reduce risk for future. Over the past four months, CAPSTONE — short for the Cislunar Autonomous Positioning System Technology Operations and Navigation Experiment — has been navigating an unusual yet efficient deep space route to the Moon. This route — called a ballistic lunar transfer — follows gravitational contours in deep space and allows spacecraft to reach their destination expending little energy. The trajectory was designed by Advanced Space, a Colorado small business that owns and operates CAPSTONE on behalf of NASA. CAPSTONE has performed five maneuvers over the past few months to line up its trajectory for orbit insertion, with the team adapting to unexpected challenges to keep CAPSTONE on track...

National Aeronautics and Space Administration - Nov 10, 2022

Research team uses NASA's satellite imagery to determine rainforest quality influences extinction risk

...Scientists from six universities who have received funding through the NASA Earth Science program, were at a conference near Bozeman seven years ago when they began brainstorming how conservationists could use NASA data. They came up with the idea of using satellite imagery to develop a comprehensive index of forest health to determine the relative risks of extinction in different types of forests. The researchers evaluated the integrity of tropical rain forests in Central and South America, Africa, and Asia based on two main criteria. The first involved data on the age of forested stands and their canopy heights and forest canopy structures. The second involved satellite data that measured human pressure, including the distance from forest stands to roads, cities or clearcuts. The scientists knew that human pressure was an important variable to study because some forests with good structural condition are not home to healthy populations of vertebrates. In these so-called 'empty forests,' wildlife has been removed through hunting and poaching or through invasive species. The researchers found, "There was lower risk of extinction and lower loss of population abundance in these high-integrity forests than in other types of forests. We even found that having a small amount of high-integrity forest was better than having a large amount of low-integrity forest for these responses." ...

Montana State University - Nov 9, 2022

NSF grant supports development of GPS-free, secure communication

...Secure communication between wireless devices requires access to GPS — not to know the location of the devices, but to know when and how to communicate. Currently, that's done using GPS satellites; devices can stay in sync by pinging a satellite at regular intervals. When there is no access to GPS, or if a GPS signal is maliciously jammed or tampered with, there can be no guarantee of secure communications. The National Science Foundation has awarded Shantanu Chakrabarty, at Washington University in St. Louis, a grant to address these encryption dead zones. He is looking not to satellites in space, but rather inward to the quantum realm to provide precise synchronization for secure communications when GPS is inaccessible. He will use the self-powered timers developed in his lab as accurate timekeepers and synchronize "tokens," 1s or 0s generated by one of nature's few truly random number generators: quantum tunneling...

Climate Change / Green Energy & IT

FACT SHEET: President Biden Announces New Initiatives at COP27 to Strengthen U.S. Leadership in Tackling Climate Change

...President Biden believes that tackling the climate crisis and keeping the 1.5-degree C temperature goal within reach requires “all hands on deck” – demanding the mobilization of local, state, and national governments, the private sector, and philanthropies. At COP27, President Biden and his Administration announced new initiatives to advance this objective, including: * Accelerating Egypt’s Clean Energy Economy, Enhancing Climate Ambition, and Supporting Energy Security – Germany and the United States announced over \$250 million in resources to unlock \$10 billion in commercial investment to support Egypt’s clean energy economy. The program will deploy 10 GW of new wind and solar energy while decommissioning five GW of inefficient natural gas generation. * Expanding the Global Methane Pledge to Rapidly Reduce Global Temperatures While Boosting Energy Security...

The White House - Nov 11, 2022

Climate risks for Gulf of Mexico coral reefs spelled out in study using computer models to simulate climate warming

...Climate scientists and marine biologists at Rice University, the University of Colorado Boulder and Louisiana State University used computer models to simulate climate warming from 2015-2100 under both a "business-as-usual" scenario with very high emissions and a scenario in which emissions were reduced to high levels. The U.S. National Science Foundation-supported study analyzed ocean warming and ocean acidification levels for specific regions in the Gulf of Mexico and Caribbean and found reducing emissions could delay the onset of critically warm ocean temperatures in some areas where reefs are still healthy. The study found ocean temperatures in the Caribbean and parts of Florida could reach critically warm temperatures as early as 2050, posing a serious risk for coral survival. "We can help protect and keep the high coral-cover reefs we have if we take immediate action to shift how much energy we use and where we get our energy," said Rice University marine biologist Adrienne Correa...

National Science Foundation - Nov 15, 2022

Arctic Cyclones to Intensify as Climate Warms, NASA Study Predicts

...NASA scientists project spring Arctic cyclones will intensify by the end of this century because of sea ice loss and rapidly warming temperatures. Those conditions will lead to stronger storms that carry warmer air and more moisture into the Arctic. "More intense storms will be a hazard to shipping activities, oil and gas drilling and extraction, fishing, and Arctic ecosystems and biodiversity — that's where maritime weather forecasting is important but still challenging and difficult," said Dr. Chelsea Parker, who led the study. Parker and colleagues analyzed computer simulations of nine cyclones that have hit the Arctic in the past decade. The warming and sea ice loss of recent decades did not appear to have a noticeable effect on the behavior of those spring storms. The scientists then simulated an Arctic with even warmer temperatures and less sea ice cover using results from the Coupled Model Intercomparison Projects and saw a really big response from the cyclones. The team found that by the end of the century, cyclone wind speeds could increase up to 38 mph, depending on storm characteristics and the environmental conditions of the region. The peak intensity of such storms could be up to 30% longer, and precipitation will likely increase. If cyclones start to bring rainfall in the spring, sea ice may begin melting sooner and less of it will survive the summer melt season...

National Aeronautics and Space Administration - Nov 15, 2022

DAF already taking steps to meet Climate Action Plan goals

...The Department of the Air Force recently released its Climate Action Plan formulated in foresight and response to climate change and its reshaping of the increasingly complex global security environment. DAF installations are implementing innovative solutions and pilot programs to meet the goals outlined in the plan, bolstering mission readiness through installation energy resilience. Priority one places emphasis on modernizing infrastructure and investing in climate-ready installations to maintain air and space dominance in the face of climate risks. In support of priority two, to make climate-informed decisions, the DAF has begun working to incorporate climate attributes into their policy and practice to make energy and infrastructure projects resilient to climate impacts while maximizing operational capability and reducing greenhouse gas emissions where possible. Priority three focuses on pursuing alternative energy sources, optimizing energy usage and working toward 100%

carbon-pollution free electricity and zero emission vehicle targets. The DAF is realizing the key objectives outlined in this priority through innovative investments and pilot programs at installations across the country...

Air Force Link - Nov 9, 2022

NASA Study: Rising Sea Level Could Exceed Estimates for U.S. Coasts

...By 2050, sea level along contiguous U.S. coastlines could rise as much as 12 inches (30 centimeters) above today's waterline, according to researchers who analyzed nearly three decades of satellite observations. The results from the NASA Sea Level Change Team could help refine near-term projections for coastal communities that are bracing for increases in both catastrophic and nuisance flooding in coming years. Global sea level has been rising for decades in response to a warming climate, and multiple lines of evidence indicate the rise is accelerating. The researchers noted that the accelerating rate of sea level rise detected in satellite measurements from 1993 to 2020 – and the direction of those trends – suggest future sea level rise will be in the higher range of estimates for all regions. The trends along the U.S. Southeast and Gulf coasts are substantially higher than for the Northeast and West coasts, although the range of uncertainty for the Southeast and Gulf coasts is also larger. This uncertainty is caused by factors such as the effects of storms and other climate variability, as well as the natural sinking or shifting of Earth's surface along different parts of the coast...

National Aeronautics and Space Administration - Nov 15, 2022

USDA Highlights AIM for Climate Accomplishments, Announces 2023 Plans

...At the 27th United Nations Climate Change Conference of the Parties (COP27) this week, United States Secretary of Agriculture Tom Vilsack highlighted key accomplishments of the Agriculture Innovation Mission for Climate. Together with the United Arab Emirates, the United States also:

* Launched the AIM for Climate Innovation Hub a new virtual platform that connects partners and the public, invigorating critical conversations around climate-smart agriculture and food systems innovation through cross-collaboration and exchange of ideas and information regarding challenges, opportunities, and investment gaps. * Announced the Call to Action: Uniting Global Venture Investment in support of Climate-Smart Agricultural Innovation to encourage increased investments in climate-smart agricultural innovation. * Announced the Grand Challenge: Leveraging the Power of AI and Machine-Learning, to further advance climate-smart agricultural innovation through open-source artificial intelligence and machine learning. AIM for Climate partner Enterprise Neurosystem, an open-source community of leading academic institutions and chief scientists of America's top technology companies, will host this Grand Challenge...

USDA APHIS - Nov 12, 2022

Digital Health

Looking towards the future of telehealth in Medicare, evidence is needed

...Throughout the COVID-19 pandemic, telehealth services have played an essential role in maintaining and expanding Americans' access to their health care. We encourage medical professionals to share their recommendations on which telehealth services should be covered by Medicare.

The process and criteria for submitting requests is available on the Medicare Telehealth webpage...

The White House - Nov 10, 2022

Virtual Therapy Shows Real Promise for Managing Phantom Limb Pain

...U.S. Navy veteran Dean Peterson has suffered from phantom limb pain ever since his lower left leg was amputated 16 years ago after a hunting accident. Phantom limb pain is believed to be caused by mixed signals to the brain after an amputation. The researchers' therapy, called Mixed reality system for Managing Phantom Pain (Mr. MAPP), is designed to help the brain resolve the signals. Mr. MAPP is the result of years of research led by Dr. Balakrishnan Prabhakaran and in collaboration with the VA. Mr. MAPP involves a laptop, camera and virtual reality (VR) headset. The system, which a small group of patients used in their homes during the four-week pilot trial, generates a virtual 3D model of the user's missing limb. Wearing the VR headset, the user plays a series of games that involve using the virtual model of the missing limb to complete tasks such as stomping or bursting a bubble on the screen...

The University of Texas at Dallas - Nov 9, 2022

Researchers discover immunity genetics leading to worse COVID outcomes for men

...A team of researchers from Princeton University, Flatiron Institute of the Simons Foundation, the Icahn School of Medicine at Mount Sinai and the Naval Medical Research Center had begun studying a group of nearly 3,000 members of the U.S. Marine Corps before a COVID-19 outbreak during their training in 2020, and continued to follow them through the infections and afterwards. The research team found that even though infected females had higher rates of symptoms, their average viral load was 2.6 times lower than that of the males. They also identified molecular signatures that pointed to a sex-specific genetic basis for the difference. Using advanced analysis techniques to sift through enormous data sets, the research team waded through the many existing hypotheses about the sex differences and find a causal explanation for the differences in outcomes: sex-specific molecular signatures that are present prior to infection. The analysis indicates that the women's innate immunity is more activated both prior and during infection, thus helping fight the virus more effectively. Immune warfare is grueling, which is also why females show more severe symptoms during COVID infections: higher fevers, more severe fatigue and worse coughs. It was already known that males had worse COVID outcomes, but what made this study unique was that the computational scientists had enough data — and, critically, pre-infection bloodwork — to create a causal model linking sex-specific pre-infection innate immune states to response to infection and outcomes. ... This work was supported by the Defense Health Agency through the Naval Medical Research Center and the Defense Advanced Research Projects Agency. Princeton University - Nov 14, 2022

STEM / Workforce & IT

A Proclamation on National Apprenticeship Week, 2022

...During National Apprenticeship Week, we celebrate the workers of America — the best in the world — and lift up the importance of apprenticeship programs run by unions, employers, and other organizations. An Apprenticeship Ambassador Initiative assembled a national network of businesses and labor organizations and secured from them a collective commitment to hire over 10,000 new apprentices in the next year alone. The Administration's 90-Day Trucking Apprenticeship Challenge and 120-day Cybersecurity Apprenticeship Sprint bolstered this progress, garnering hundreds of private sector commitments for new apprenticeship programs in these critical sectors... The White House - Nov 10, 2022

U.S. Department of Education Launches New Initiative to Support Career-Connected Learning and Increase Job Pathways for Young Americans

...The U.S. Department of Education (Department) announced the launch of Raise the Bar: Unlocking Career Success, a new Biden-Harris Administration initiative supported by the Departments of Commerce and Labor to increase and expand access to high-quality training programs to help young Americans pursue jobs in today's in-demand fields, and be prepared for careers of the future. As part of today's launch, the Department is announcing \$5.6 million dollars in Perkins funding for a new program to expand work-based learning opportunities for students. As part of this new initiative, the Department will host regional summits with students, educators, employers, and other stakeholders to learn about practices that have led to success and challenges that must be addressed... U.S. Department of Commerce - Nov 14, 2022

GenCyber camp will help local teachers integrate cybersecurity into lesson plans

...A new initiative led by Binghamton University aims to give local teachers the tools they need to help their students navigate through today's cybersecurity risks. The GenCyber program will offer a free eight-day cybersecurity camp for 25 middle school and high school teachers in summer 2023, as well as pre- and post-camp outreach activities in K-12 schools. Funding the camp is a \$136,000 grant from the National Security Agency. The camp will cover computer and network fundamentals, cybersecurity ethics, cyberbullying, email/web/social network security and cybersecurity careers. Participating teachers will receive \$900, a Chromebook, lesson slides and a T-shirt... BingUNews - Nov 10, 2022

STEM / Workforce Resources & Opportunities

R&D WORKFORCE TRAINING: FEDERAL AGENCIES' STEM INTERNSHIPS, SCHOLARSHIPS, AND TRAINING OPPORTUNITIES

...Increasing the availability of STEM opportunities is a priority in the Biden-Harris Administration. To help facilitate this, the team at NITRD developed a STEM Portal that allows anyone to search for internships and other training opportunities at Federal agencies. The NITRD STEM PORTAL is a searchable database that includes a description, link, and contact information for each program listing. Government-sponsored internships and training programs are competitive, but there are many Federal opportunities and the NITRD STEM Portal is here to help... The Networking and Information Technology Research and Development (NITRD) Program - Oct 18, 2022

NSF and DOE partner on geothermal internship opportunity

...The U.S. National Science Foundation and the Department of Energy, through its Office of Energy Efficiency and Renewable Energy, or EERE, have initiated a joint training opportunity in the area of geothermal energy through NSF's INTERN program. Geothermal energy has potential as a renewable, reliable and flexible source for electricity, heating and cooling. While geothermal resources can be found nationwide, science and engineering barriers have limited the growth of geothermal industry. NSF's INTERN program (formally known as Non-Academic Research Internships for Graduate Students) provides graduate students with six-month experiential learning opportunities through research internships where they acquire core professional competencies and skills. INTERN complements academic research training, enhances preparation for multiple career paths, and encourages the participation of graduate students from groups that are underrepresented in science, technology, engineering and mathematics. The NSF-DOE EERE Geothermal INTERN opportunity will fund approximately 10 internships per Fiscal Year, providing up to \$55,000 per student in a six-month period... National Science Foundation - Nov 15, 2022

NITRD News

CAREER OPPORTUNITIES: Program Manager, National Strategic Computing Reserve Pilot Program Office

...The Federal Government is creating a National Strategic Computing Reserve (NSCR) that can be called up in times of urgent national needs to address emergencies from pandemics to earthquakes to other natural or man-made disasters. The NSCR is envisioned as a coalition of resource providers (of compute, software, and data) and technical experts spanning government, academia, industry, nonprofits/foundations, civil society, and communities of practice supported by appropriate coordination structures and mechanisms that can be mobilized quickly to provide critical cyberinfrastructure capabilities and services in times of urgent need. The Networking and Information Technology Research and Development (NITRD) Program is seeking candidates interested in serving as the Program Manager for the NSCR Pilot Program Office. The NSCR Pilot Program Office will (1) develop a plan, to include the structures, policies, and processes for an NSCR Program Office, and (2) prototype the implementation and operation of these structures, policies, and processes. Submit your resume by December 15, 2022. The Networking and Information Technology Research and Development (NITRD) Program - Nov 11, 2022

Upcoming Conferences / Workshops / Webinars

8th Annual NICE K12 Cybersecurity Education Conference: December 5-6th

...The NICE K12 Cybersecurity Education Conference in St. Louis, Missouri is on December 5-6, 2022 and it is the national conference for K12 cybersecurity education! Gain tools to accelerate learning, identify methods to nurture a diverse learning community, and guide career development for the cybersecurity workforce of the future. National Institute of Standards and Technology - Nov 10, 2022

NIST: Cybersecurity Measurement Workshop: December 13th

...The NIST Cybersecurity Risk Analytics Team is hosting a workshop to provide an overview of the proposed changes for Special Publication 800 – 55, Revision 2, Performance Measurement Guide for Information Security. The purpose of the workshop is to provide clarity, answer questions, and gather stakeholder comments and opinions to ensure that Revision 2 will deliver comprehensive and relevant practices for measurement and

metrics programs. A panel of experts will also discuss the new changes proposed and the current state of information security performance measurement. Virtual. December 13, 2022 10:00am - 2:00pm EST
National Institute of Standards and Technology - Nov 10, 2022

Innovation Through NITRD Coordination

Networking and Information Technology Research and Development - National Coordination Office, Washington, DC USA

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