



## NITRD News Brief

*Saturday April 22 is Earth Day 2023 - Check Out Ways Technology is Being Used to Save the Earth!*

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](mailto:nco@nitrd.gov) and voilà they will receive the news brief with the cool technology articles each week!

### Climate Change / Green Energy & IT

#### **FACT SHEET: President Biden to Catalyze Global Climate Action through the Major Economies Forum on Energy and Climate**

...President Biden will convene leaders of the Major Economies Forum on Energy and Climate (MEF). The President announced significant new steps the United States is taking to support developing countries in taking stronger climate action – including providing \$1 billion to the Green Climate Fund and requesting \$500 million for the Amazon Fund and related activities – and invite other countries to join the United States and others in fully leveraging the multilateral development banks to better address global challenges, like climate change. The President was joined by other leaders in new efforts aimed at accelerating progress in four key areas necessary for keeping a 1.5°C limit on warming within reach. This will require accelerating progress in key energy-related sectors, such as electric power and transportation...

The White House - Apr 20, 2023

### **We Need a Second Earth to Support Our Current Consumption. We Can Do Better if We Think ‘Circular.’**

...Each year, scientists calculate the date at which humanity’s demands for the Earth’s resources exceed the Earth’s capacity to regenerate what we need in a year. It’s called Earth Overshoot Day. In 1971, it fell on Dec. 25. Disturbingly, by 2022, it fell on July 28. In short, we humans need 1.75 Earths to support our current rate of consumption! That is unsustainable, and we have to make changes. If we’re going to secure a sustainable future on the only planet we have to live on, we must transition to a circular economy. Clean energy technologies are renewable, and they allow us to improve our quality of life by reducing pollution. Solar is the most rapidly growing clean energy technology. The problem is — we have a lack of infrastructure in place to recover used solar panels. NIST research looks to “circularize” solar panels and other clean energy technologies, so that they do not themselves become environmental liabilities. We want to prevent another potential electronics waste crisis with renewable energy technologies. Industrial ecology is a branch of science that aims to balance environmental considerations with industrial processes. Known as the “science of sustainability,” industrial ecology can be traced back to research related to manufacturing strategies from the 1990s. NIST’s current research on clean energy technologies integrates industrial ecology. Manufacturing-related standards thus far have been developed independently for different products and lack a holistic product life cycle perspective. The consequences of having such few post-use standards for consumer products are evident in the current electronics waste crisis. Only 20% of our current electronics waste gets recycled...

National Institute of Standards and Technology - Apr 19, 2023

### **DHS Signs MOU with GSA: Reinforcing A Green Footprint for Earth Day 2023 and Posterity**

...On April 17, 2023, DHS, and the General Services Administration (GSA) signed a memorandum of understanding (MOU) that will enhance DHS programs to reduce carbon emissions, while enhancing operational resilience. As federal efforts to address the growing impacts of a changing climate continue, the memorandum will solidify a strategic partnership between the two agencies to increase facility sustainability and resilience, and spur development of clean energy technologies and infrastructure. This MOU with GSA will also employ strategies that offer significant decarbonization initiatives well as short- and long-term reduction in greenhouse gases with the goals of net-zero global emissions and national security mission advancement...

Homeland Security - Apr 17, 2023

### **Biden-Harris Administration Announces \$82 Million Investment to Increase Domestic Solar Manufacturing and Recycling, Strengthen the American Clean Energy Grid**

...The U.S. Department of Energy (DOE) announced \$52 million for 19 selected projects, including \$10 million from the Bipartisan Infrastructure Law, to strengthen America’s domestic solar supply chain, and \$30 million in funding for technologies that will help integrate solar energy into the grid. The research, development, and demonstration projects aim to enhance domestic solar manufacturing, support the recycling of solar panels, and develop new American-made solar technologies. Additionally, this significant investment will help promote cheaper, more efficient solar cells and advance cadmium telluride (CdTe) and perovskite solar manufacturing—two technologies vital to diversifying the solar supply chain...

Department of Energy - Apr 20, 2023

## **Federal Agency Funding Opportunities**

### **DHS S&T Announces \$45M Funding Opportunity for New Center of Excellence for Homeland Security in the Arctic**

...Accredited United States colleges and universities are invited to submit proposals to lead the new Department of Homeland Security (DHS) Center of Excellence (COE) for Homeland Security in the Arctic (HSA). The DHS Science and Technology Directorate (S&T) announced a funding opportunity to lead the new Center for up to 10 years and a total of \$45 million through a cooperative agreement. The deadline for submitting proposals is by 11:59 PM ET on June 19, 2023. S&T will conduct an informational webinar for interested applicants on May 9, 2023 at 4:00 PM ET. During the call, DHS will discuss the notice of funding opportunity and allow interested applicants to ask questions...

Homeland Security - Apr 19, 2023

### **DARPA Seeking Innovative Concepts for Next-Generation Antennas**

...DARPA is soliciting disruptive ideas from small businesses and nontraditional defense contractors for novel antenna designs, materials, manufacturing, or processing as the first topic issued under the agency’s Bringing Classified Innovation to Defense and Government Systems (BRIDGES) initiative. The topic area aims to explore new designs that would offer significantly increased performance or substantial reduction in size, weight, power, and cost (SWaP-C) compared to current state of the art. DARPA will conduct an initial round of evaluation on proposals received before 5 p.m. Eastern time, Wednesday, May 31, 2023...

DARPA - Apr 14, 2023

### **US Department of Labor announces \$5M funding opportunity to attract, retain women in Registered Apprenticeships, nontraditional occupations**

...The U.S. Department of Labor today announced the availability of \$5 million to fund up to 14 grants to attract and support women in gaining access to Registered Apprenticeship programs in industries where they are underrepresented such as construction, manufacturing and cybersecurity. The Women in Apprenticeship and Nontraditional Occupations grants are administered by the department's Employment and Training Administration and Women's Bureau. Currently, women only comprise approximately 14 percent of Registered Apprentices while they account for nearly half the U.S. labor force. This funding opportunity will help address the significant underrepresentation of women in Registered Apprenticeship in skilled trades, such as construction, and in emerging, high-growth industries like manufacturing, infrastructure, cybersecurity and healthcare...

U.S. Department of Labor - Apr 14, 2023

### **Biden-Harris Administration Announces \$250 Million to Accelerate Electric Heat Pump Manufacturing Across America**

...The U.S. Department of Energy announced a \$250 million funding opportunity to accelerate electric heat pump manufacturing in America. This is the first funding opportunity announcement stemming from DOE's new authorization to utilize the Defense Production Act to increase domestic production of five key clean energy technologies. ... Concept papers, which are required for all applicants, are due on May 19, 2023, at 5 p.m. ET. Full applications are due on August 1, 2023, at 5 p.m. ET.

Department of Energy - Apr 18, 2023

### **U.S. Department of Energy's INCITE program seeks proposals for 2024 to advance science and engineering at U.S. leadership computing facilities**

...The U.S. Department of Energy's (DOE) Innovative and Novel Computational Impact on Theory and Experiment (INCITE) program is now accepting proposals for high-impact, computationally intensive research campaigns in a broad array of science, engineering and computer science domains. Proposals must be submitted between April 10 and June 16. The INCITE program offers researchers the opportunity to pursue transformational advances in science and technology through large allocations of computer time and supporting resources. Open to researchers around the world from academia, industry and government agencies, the INCITE program will award up to 60% of the allocable time on DOE's leadership-class supercomputers. In addition to seeking traditional simulation-based projects, the call for proposals is open to projects that involve applications in areas of data science, including data-intensive computing, and machine learning. Crosscutting proposals targeting the convergence of simulation, data and learning are also encouraged. Proposals will be accepted until 8 p.m. EDT on Friday, June 16. Awards are expected to be announced in November...

Argonne National Laboratory - Apr 12, 2023

## **Artificial Intelligence / Machine Learning**

### **DOE/NIH-Funded Research Brings Deep Learning-Drives Insights into Protein-Protein Interactions**

...Until now, protein-protein interactions were mainly discovered and characterized by experimental approaches. DeepMind's AlphaFold 2 is an artificial intelligence system originally designed to predict the shapes of a single protein sequence. Scientists used AlphaFold 2 to develop a powerful deep learning approach for predicting and modeling multi-protein interactions, AF2Complex. This computational approach generates much more accurate structural models than previous methods for modeling a protein complex. This work was funded in part by the Department of Energy Office of Science, Office of Biological and Environmental Research and by the National Institutes of Health Division of General Medical Sciences...

Department of Energy - Apr 17, 2023

## **Robotics / Autonomous Vehicles**

### **NASA's Curiosity Mars Rover Gets a Major Software Upgrade**

...A major software update that has been installed on NASA's Curiosity rover will enable the Mars robot to drive faster and reduce wear and tear on its wheels. Planning for this update goes back to 2016, when Curiosity last received a software overhaul. Some changes this time around are as small as making corrections to the messages the rover sends back to mission controllers on Earth. Others simplify computer code that has been altered by multiple patches since Curiosity touched down in 2012. The biggest changes will help keep Curiosity rolling more efficiently for years to come. The rover can now do more of what the team calls "thinking while driving" – something NASA's newest Mars rover, Perseverance, can perform in a more advanced way to navigate around rocks and sand traps. When Perseverance drives, it constantly snaps pictures of the terrain ahead, processing them with a dedicated computer so it can autonomously navigate during one continuous drive. Curiosity doesn't have a dedicated computer for this purpose.

Instead, it drives in segments, halting to process imagery of the terrain after each segment. That means it needs to start and stop repeatedly over the course of a long drive. The new software will help the venerable rover process images faster, allowing it to spend more time on the move. Engineers realized that sharp rocks were chipping away at the treads, so they came up with an algorithm to improve traction and reduce wheel wear by adjusting the rover's speed depending on the rocks it's rolling over...  
National Aeronautics and Space Administration - Apr 13, 2023

### **Drones Will Advance Research at NSF-Funded IoTs Center and USDA-Funded AI Institute to Monitor Environmental Conditions**

...Unmanned aerial vehicle (UAV) equipment donated by Texas-based start-up SeekOps Inc will support UC Merced's research efforts in environmental monitoring and conservation. The UAVs can provide accurate, reliable and cost-effective solutions for methane monitoring and mitigation in the energy industry, including traditional oil and gas and renewable natural gas production. The UAV technology will allow new advances for several research projects at UC Merced, including the Internet-of-Things for Precision Agriculture Engineering Research Center funded by the National Science Foundation. "Developing and deploying new technologies to accelerate a climate resilient future for our food systems in the San Joaquin Valley and across the globe is at the heart of our research mission," said Associate Dean for Research Professor Joshua Viers, who leads UC Merced's USDA-funded Artificial Intelligence Institute known as AgAID...  
UC Merced News - Apr 13, 2023

## **Quantum**

### **NASA Celebrated World Quantum Day**

...Harry Shaw, quantum communications and computing activities lead, created the quantum lab, identified experiments, and found applicable commercial equipment vendors. Shaw is establishing a quantum communications services pathway by performing experiments related to quantum entanglement. NASA's Jet Propulsion Laboratory (JPL) in Southern California developed a device that can count huge numbers of single photons with incredible precision. The Performance-Enhanced Array for Counting Optical Quanta (PEACQ) detector could transform how quantum computers, located thousands of miles apart, exchange huge quantities of quantum data. The quantum communications team at NASA's Glenn Research Center in Cleveland studies technologies and architectures that can enable space-based quantum networks. They model satellite communications that utilize entangled photons as carriers of quantum information to transmit messages as opposed to the current classical communications methods...  
National Aeronautics and Space Administration - Apr 14, 2023

### **S&T's work in Quantum Information Science: Big Promise from the Very Small**

...DHS released a new episode of our Technologically Speaking podcast that highlights S&T's work in Quantum Information Science (QIS). Encryption is a vital part of what we work on here at the Science and Technology Directorate and across the Department of Homeland Security. Being able to communicate securely is crucial, and the speed and power that will be possible with quantum computers could soon make all of the encryption that we currently use obsolete. S&T with the National Institute of Standards and Technology have begun the process of designing and testing new forms of encryption that can withstand the onslaught of this new level of computing power. S&T will begin research for the U.S. Coast Guard that will use quantum sensing to enable better communications in the Arctic region...  
Homeland Security - Apr 14, 2023

### **FSU announces bold investments in quantum science and engineering**

...Florida State University will dedicate more than \$20 million to quantum science and engineering over the next three years. Quantum engineering takes advantage of the principles of quantum mechanics to develop technologies beyond what is capable with classical physics. FSU researchers are part of the endeavor to explore quantum science and engineering. For example, Professor Eugene DePrince is leading a \$4.4 million Department of Energy (DOE) project to help create software that can take advantage of supercomputer capabilities and advance quantum information science. Professor Wei Guo worked with DOE researchers to develop a new quantum bit platform. Professors Stephen Hill and Michael Shatruk are participants in a \$10 million multi-institutional Energy Frontier Research Center, also sponsored by DOE...  
Florida State University News - Apr 12, 2023

## **Cybersecurity / Privacy**

### **Small Business is a Big Priority: NIST Expands Outreach to the Small Business Community**

...Small businesses are a major source of innovation for our country—but they're often faced with limited resources and budgets. Many of them need cybersecurity solutions,

guidance, and training so they can cost-effectively address and manage their cybersecurity risks. Hmm...where can you find guidance like this all in one place? Voila! The Small Business Cybersecurity Corner! This website was created by NIST in 2019 in response to the NIST Small Business Cybersecurity Act, which directed us to “disseminate clear and concise resources to help small business concerns identify, assess, manage, and reduce their cybersecurity risks.” On March 6, 2023, NIST launched a new small business initiative that will create more opportunities for the exchange of information, resources, and ideas between NIST and the nation’s small business community via the creation of a new Small Business Community of Interest. The COI will bring together the small business community, companies, trade associations, and others who can share business insights, expertise, challenges, and perspectives to guide our work. NIST’s National Cybersecurity Center of Excellence (NCCoE) will be hosting two events during National Small Business Week (April 30-May 6, 2023) as part of its NCCoE Learning Series and to begin engaging the new COI. A third virtual event will be hosted in June... National Institute of Standards and Technology - Apr 20, 2023

### **Making a smaller target for hackers: Technology keeps industrial control systems safer by limiting online access**

...OpDefender, an innovation developed at Idaho National Laboratory for the U.S. Department of Homeland Security (DHS), is based on the principle of limiting the attack surface to the greatest possible extent. Operational control technology exists throughout the nation’s critical infrastructure at all levels. OpDefender works on the premise that no device on a control systems network can be trusted. It incorporates network switches that analyze and filter traffic network packets in real time, allowing operators to impose “whitelisting” rules. Its human machine interface ensures that no device can communicate with a network until it has been configured by an operator. The proprietary software in OpDefender allows it to act as a “smart” switch, distinguishing between routine and questionable communications. Incorporating a human in the loop is one of the most important ways OpDefender blends automated controls with the flexibility required in industrial operations. Critical support for OpDefender has come from the DHS Science and Technology Directorate’s (S&T) Commercialization Accelerator Program (CAP)... Idaho National Laboratory - Apr 17, 2023

## **5G, Wireless Spectrum, Networking & Communications**

### **Dear Colleague Letter: Seeking US Industry and US Federal Agency Partners to Support Research Projects in Advanced Networking Systems**

...The National Science Foundation (NSF) is seeking US industry partners and US Federal Agencies to form public-private partnerships with NSF to co-design and jointly support research programs in advanced networking systems. The programs built through these partnerships will seek innovations to enhance the various aspects of next generation communications, sensing, networking, and computing systems. The programs are expected to fund collaborative fundamental research that transcends the traditional boundaries of individual disciplines to achieve the program goals. These teams may consist of investigators from Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited, and having a campus located in the US. Three NSF directorates (Computer and information Science and Engineering; Engineering; and Technology, Innovation and Partnerships) plan to build on past successes and provide the networking research and education community with the opportunity to pursue ambitious, fundamental research agendas that promise to define the future of advanced networking systems. ... Contributions must be received on or before 5:00 PM Eastern time on May 15, 2023. National Science Foundation - Apr 18, 2023

### **NASA Teams with US Forest Service to Tally America’s Oldest Trees**

...On Earth Day 2022 the Biden Administration called upon the Department of Agriculture and the Bureau of Land Management to define and map such forests on federal lands. A year later, that work has yielded a first-ever national inventory of mature and old-growth forests – broadly characterized as forests at an advanced stage of development. And with some help from NASA, the public will soon be able view some of these forests like never before. For decades the U.S. Forest Service has studied such trees in hundreds of thousands of plots across the country, but the agency has never issued a formal accounting until now. America’s forests help absorb more than 10% of our annual greenhouse gas emissions. While younger vegetation accumulates carbon more rapidly, old-growth forests contain more biomass overall and store more carbon. NASA-funded scientists are using a space-based instrument called GEDI (Global Ecosystem Dynamics Investigation) to provide a detailed picture of these forests. From its perch on the International Space Station, GEDI’s laser imager (lidar) is able to peer through dense canopies to observe nearly all of Earth’s temperate and tropical forests. By recording the way the laser pulses are reflected by the ground and by plant material (stems, branches, and leaves) at different heights, GEDI [really cool tech!] makes detailed measurements of the three-dimensional structure of the planet’s forests and fields. It can even estimate the weight, height, and vertical structure of trees. The Forest Service will continue to work alongside partners like NASA to gather aerial and satellite imagery and map mature and old growth at finer scales. Such data can also help USFS create a long-term monitoring system. Meanwhile, a team of interagency experts will analyze and assess threats and risks to these areas... National Aeronautics and Space Administration - Apr 20, 2023

### **That’s No Meteor: NASA Satellite’s Elusive Green Lasers Spotted at Work**

...This is the first time the ICESat-2 team has seen footage of NASA’s Ice, Cloud and Land Elevation Satellite 2, or ICESat-2, satellite’s green laser beams streaming from orbit

to Earth. ICESat-2 was launched in September 2018 with a mission to use laser light to measure the height of Earth's ice, water, and land surfaces from space. The laser instrument, called a lidar, fires 10,000 times a second, sending six beams of light to Earth. It precisely times how long it takes individual photons to bounce off the surface and return to the satellite. Computer programs use these measurements to calculate ice losses from Greenland and Antarctica, observe how much of the polar oceans are frozen, determine the heights of freshwater reservoirs, map shallow coastal regions, and more. The laser light is tricky to spot. If someone stood directly under the satellite and looked up, the laser would have the strength of a camera flash more than 100 yards away. The beam is even more difficult to capture since cameras and eyes need the laser light to reflect off something to see the beam from the side...

National Aeronautics and Space Administration - Apr 14, 2023

### **NASA-Led Project Tracking Changes to Water, Ecosystems, Land Surface**

...The OPERA (Observational Products for End-Users from Remote Sensing Analysis) project is managed by NASA's Jet Propulsion Laboratory, with partners from NASA's Goddard Space Flight Center, the U.S. Geological Survey (USGS), the University of Maryland, the University of Alaska Fairbanks, and Southern Methodist University. Scientists conceived OPERA in 2020 to address satellite data needs across different federal agencies and to enable better access to information on everything from water management to wildfire monitoring. The goal is to make specific satellite-based observations free and timely for users. The first round of OPERA products ties together visible and infrared measurements from the ESA (European Space Agency) Sentinel-2 A/B satellites and from Landsat 8, built by NASA and operated by the USGS. These instruments will soon be augmented by data from the cloud-penetrating radars on ESA's Sentinel-1 A/B satellites and the recently launched Surface Water and Ocean Topography (SWOT) satellite, a partnership between NASA and the French space agency CNES (Centre National d'Études Spatiales). OPERA will eventually ingest satellite radar data from the NASA-Indian Space Research Organisation Synthetic Aperture Radar (NISAR) satellite, planned for launch in 2024...

National Aeronautics and Space Administration - Apr 18, 2023

## **Advanced Manufacturing**

### **NASA's New 3D-Printed Superalloy Can Take the Heat**

...NASA has demonstrated a breakthrough in 3D printable high-temperature materials that could lead to stronger, more durable parts for airplanes and spacecraft. A team of innovators from NASA and The Ohio State University detailed the characteristics of the new alloy, GRX-810. GRX-810 is an oxide dispersion strengthened alloy. In other words, tiny particles containing oxygen atoms spread throughout the alloy enhance its strength. Such alloys are excellent candidates to build aerospace parts for high-temperature applications, like those inside aircraft and rocket engines, because they can withstand harsher conditions before reaching their breaking points. Current state-of-the-art 3D printed superalloys can withstand temperatures up to 2,000 degrees Fahrenheit. Compared to those, GRX-810 is twice as strong, over 1,000 times more durable, and twice as resistant to oxidation. GRX-810 was developed under NASA's Transformational Tools and Technologies project, with support from the agency's Game Changing Development Program...

National Aeronautics and Space Administration - Apr 20, 2023

### **NASA Creates In-Space Servicing, Assembly, Manufacturing Consortium**

...NASA announced Wednesday a new consortium focused on making in-space servicing, assembly, and manufacturing (ISAM) capabilities a routine part of space architectures and mission lifecycles. Through a range of capabilities, ISAM can enable new mission paradigms and extend the life of spacecraft. In-space servicing encompasses activities including spacecraft repair, refueling, relocation, and retrofitting, while assembly and manufacturing includes abilities like 3D printing and assembling components in space. Together, these capacities can enable a more sustainable, robust, and enduring space ecosystem. NASA's Space Technology Mission Directorate (STMD) formulated and funds the Consortium for Space Mobility and ISAM Capabilities (COSMIC)...

National Aeronautics and Space Administration - Apr 19, 2023

## **Microelectronics**

### **DOD Seeks Increased Microelectronics Funding for FY 2024**

...Microelectronics, integrated sensing and cyber, as well as integrated network systems-of-systems are prioritized in the DOD's fiscal year 2024 budget request for science and technology and prototyping. This year's budget request includes about \$145 billion for research, development, testing and engineering. That request is 12% higher than in FY2023, and also represents the largest request in department history. Among the areas of focus within the RDT&E budget are 14 critical technology areas: biotechnology; quantum science; future-generation wireless technology and advanced materials; trusted artificial intelligence and autonomy; integrated network systems-of-systems;

microelectronics; space technology; renewable energy generation and storage; advanced computing and software; human-machine interfaces; directed energy; hypersonics; and integrated sensing and cyber. Microelectronics gets about \$1.7 billion in funding, while integrated sensing and cyber gets about \$1.2 billion, and integrated network systems-of-systems gets about \$763 million. Areas like trusted AI and autonomy, hypersonics and biotechnology are the next-largest areas of investment — together accounting for about \$1.6 billion in funding requests...

U.S. Department of Defense - Apr 18, 2023

## Digital Health

### **NSF-funded smart pills help diagnose gut disorders**

...NSF-supported researchers at Caltech have developed what they describe as GPS for smart pills, small enough to travel through the human body and help diagnose ailments. The smart pills can collect health data, record images and even deliver drugs as they pass through the gastrointestinal, or GI, tract. Wireless localization of smart pills and other tiny devices deep inside the body, with high accuracy, is very challenging. The technology has been dubbed iMAG, short for Ingestible Microdevices for Anatomic-mapping of Gastrointestinal-tract. The iMAG pill has the potential to be located with submillimeter accuracy...

National Science Foundation - Apr 19, 2023

### **HHS Cybersecurity Task Force Provides New Resources to Help Address Rising Threat of Cyberattacks in Health and Public Health Sector**

...The U.S. Department of Health and Human Services (HHS) 405(d) Program announced the release of the following resources to help address cybersecurity concerns in the Healthcare and Public Health (HPH) Sector: (1) Knowledge on Demand – a new online educational platform that offers free cybersecurity trainings for health and public health organizations to improve cybersecurity awareness. (2) Health Industry Cybersecurity Practices (HICP) 2023 Edition – a foundational publication that aims to raise awareness of cybersecurity risks. (3) Hospital Cyber Resiliency Initiative Landscape Analysis – a report on domestic hospitals' current state of cybersecurity preparedness, including a review of participating hospitals benchmarked against standard cybersecurity guidelines...

The U.S. Department of Health and Human Services - Apr 17, 2023

### **Increasing the Transparency and Trustworthiness of AI in Health Care**

...Through a series of blog posts over the last year, we've described our understanding of the current and potential uses of predictive models and machine learning algorithms in health care, and the role that ONC can play in shaping their development and use. In our first two posts, we described foundational trends and important history related to the use of information technology (IT) (software) to aid decision-making in health care. In our third and fourth posts, we took a more critical look at the risks that predictive DSIs could cause harm...

Health IT - Apr 13, 2023

### **National Minority Health Month: Better Health Through Better Understanding**

...In Healthy People 2030, HHS indicates that limited personal health literacy is a social risk, one associated with worse health care and health outcomes. According to the Agency for Healthcare Research and Quality, people with limited health literacy are more likely to identify themselves as members of racial or ethnic minority groups. CDC has indicated that these populations are disproportionately affected by systemic and structural factors. HHS also says that "organizational health literacy is a social determinant of health. Health literacy promotes health equity by making life-saving health information accessible to all populations. CDC recognizes the cross-cutting functions of health equity and health literacy. To better communicate with populations with low health literacy, CDC is creating and testing information-development tools, conducting workforce training in plain language and clear communication, and developing collaboration processes where the agency's scientists and health communicators work together from the beginning of product development...

Centers for Disease Control and Prevention - Apr 18, 2023

### **NSF-funded research find clues to healthy brain aging in the Bolivian Amazon**

...NSF-funded research on two of these societies, the Tsimané and Mosaic, suggests that there are optimal levels of food consumption and exercise that maximize healthy brain aging and reduce the risk of disease. Researchers enrolled 1,165 Tsimané and Mosaic adults, aged 40-94 years, and provided transportation for participants from their remote villages to the closest hospital with CT scanning equipment. The team used CT scans to measure brain volume by age. They also measured participants' body mass index, blood pressure, total cholesterol and other markers of energy and overall health. They found that the Tsimané and Mosaic experience less brain atrophy and improved cardiovascular health compared to industrialized populations in the U.S. and Europe. Rates of age-related brain atrophy, or brain shrinking, are correlated with risks of degenerative diseases like dementia and Alzheimer's. The Mosaic have more exposure to modern technology, medicine, infrastructure and education. The Mosaic showed

better health than modern populations in Europe and North America — but not as good as that of the Tsimané...  
National Science Foundation - Apr 17, 2023

## Other IT Related

### **NSF-funded scientists discover pristine deep-sea coral reefs in the Galápagos Marine Reserve**

...Scientists discovered extensive, ancient deep-sea coral reefs in the Galápagos Marine Reserve — the first of their kind to be documented inside the marine protected area since it was established in 1998. The U.S. National Science Foundation-supported expedition includes scientists at Boise State University and is in collaboration with the Galápagos National Park Directorate, Charles Darwin Foundation and the Ecuadorian Navy's Oceanographic and Antarctic Institute. The discovery of this new and healthy reef illustrates the importance of international collaborations to map and image unexplored regions of the seafloor. The observations are the first of a deep-sea coral reef in the Galápagos Marine Reserve. The human-occupied vehicle Alvin recently completed upgrades that included improved high-quality still and ultra-high definition 4K video imaging systems, as well as enhanced sampling capabilities, which allowed for stunningly clear video of the newly discovered reef sites. Exploring, mapping and sampling the Galápagos Platform is an opportunity to apply 21st-century deep-submergence and seafloor mapping technologies and innovative deep-sea imaging techniques to reveal the beauty and complexity of the volcanic and biological processes that make the Galápagos so unique...

National Science Foundation - Apr 17, 2023

### **NSF/USDA-Funded Innovation at Work: ISU technology gives farmers the tools to guess less**

...Successful farming is increasingly fueled by data and automation, innovations that can boost yields and profits while improving sustainability. Affordable sensors that quickly and accurately measure nitrogen levels would help farmer get closer to perfecting their fertilizer rates and make it easier for them to use conservation-minded practices such as applying before and after planting. Michael Castellano, professor of agronomy, is one of the co-founders of EnGeniousAg's handheld sensor that measures the concentration of nitrate, a nitrogen compound, in the stalk of a plant. Detecting nitrate levels in a plant should improve accuracy of fertilizer recommendations as compared to using soil tests, because it is a measure of how much nitrogen has been absorbed instead of how much is available. Two Small Business Innovation Research grants – \$100,000 from the U.S. Department of Agriculture and \$225,000 from the National Science Foundation – have helped EnGeniousAg progress...

Iowa State University News Service - Apr 18, 2023

## STEM / Workforce & IT

### **NSF 101: The Postdoctoral mentoring plan**

...The postdoctoral mentoring plan has been an NSF requirement since 2007, recognizing the important role that mentorship plays in the postdoctoral experience and their future career paths. According to the NSF Proposal and Award Policies and Procedures Guide: "Examples of mentoring activities include, but are not limited to, career counseling; training in preparation of grant proposals, publications and presentations; guidance on ways to improve teaching and mentoring skills; guidance on how to effectively collaborate with researchers from diverse backgrounds and disciplinary areas; and training in responsible professional practices." ...

National Science Foundation - Apr 17, 2023

### **DOE Announces Winner of the CyberForce® Conquer the Hill: Adventurer Edition**

...U.S. Department of Energy's (DOE) Office of Cybersecurity, Energy Security, and Emergency Response (CESER) announced the winner of the 2023 CyberForce® Conquer the Hill: Adventurer Edition Competition. In the Conquer the Hill: Adventurer Competition, students worked to complete anomalies mapped to the National Institute of Standards and Technology (NIST) National Initiative for Cybersecurity Education (NICE) Framework during an energy industry-related adventure. Competitors were presented with a variety of easy, medium, and difficult cyber challenges that they could tackle up to three times in any order they wished. The competitor who successfully completed the most challenges and earned the highest number of points was crowned the winner. Conquer the Hill: Adventurer Edition is the former of two smaller, virtual, individual-based competitions in the CyberForce Program, which precede DOE's team-based competition in the Fall. The next competition in the series will be the Conquer the Hill: Reign Edition, which will take place in July and will be themed as an escape room. Registration for this competition will open on June 1 and will remain open until June 30...

Department of Energy - Apr 18, 2023

### **Department of Labor gathered experts, stakeholders to ensure more inclusive hiring as automated technology affects decision-making**



...The Department of Labor today hosted an online “think tank” on the use of artificial intelligence tools in hiring during which federal agencies, technology innovators, disability organizations and civil rights groups convened to explore strategies for ensuring that automated employment decision tools treat workers with disabilities and other underserved communities equally. Many organizations now use artificial intelligence to screen job candidates, streamline the application process, monitor employee actions, and provide employee training. While its use offers employers efficiencies, AI tools must be designed with diverse users in mind to prevent workplace discrimination, including against people with disabilities. Hosted by the department’s Office of Disability Employment Policy’s Partnership on Employment & Accessible Technology, the four-hour event included opening remarks by Assistant Secretary for Disability Employment Policy Taryn Williams. U.S. Equal Employment Opportunity Commission Chair Charlotte A. Burrows and the Associate Director of the National Institute of Standards and Technology’s Info Technology Laboratory Elham Tabassi also delivered remarks...

U.S. Department of Labor - Apr 17, 2023

### **Cyber Direct Commissioning Program enhancement to onboard future cyber officers**

...The U.S. Air Force is revolutionizing how it recruits and commissions the next generation of cyber professionals. The Air Force is utilizing the Cyber Direct Commissioning Program to address current manning requirements in the cyber workforce. Leveraging this authority allows the Air Force to fulfill critical technical skills desired by various missions throughout the service. This program reduces the training cycle for officers and accelerates the onboarding process to meet urgent and future mission needs. The CDCP is designed to tap talented individuals outside the traditional military pipeline. This initiative selects highly qualified subject matter experts to fill the ranks of Lieutenant to Colonel to meet current mission needs utilizing constructive service credit. Individuals must meet a few basic requirements to be eligible to join the direct commissioning track. The CDCP aims to attract people with cyber-related civilian work experience and graduate degrees. Applicants must meet basic officer eligibility requirements and possess demonstrated cybersecurity or cyber operations expertise through advanced academic degrees, relevant industry experience, or professional certifications. The CDCP aims to add more cyber professionals to the U.S. Air Force and provide them with a direct pathway to success...

Air Force Link - Apr 19, 2023

### **UB, partners receive \$1.5 million NIH grant for infectious disease training program**

...University at Buffalo and partners have received a \$1.5 million National Institutes of Health (NIH) grant to lead the training of 10 Jamaican scientists in virology research. The five-year award, from NIH’s Fogarty International Center, is a continuation of funding for the Global Infectious Diseases Research Training Program, a research collaboration between the UB Center for Integrated Global Biomedical Sciences, the University of the West Indies (UWI), SUNY Upstate Medical University and Jamaica Ministry of Health and Wellness. UB and partners will use the new funding to train predoctoral and postdoctoral scientists, focusing on emerging and chronic viral infections in Jamaica and the Caribbean region...

University at Buffalo - Apr 14, 2023

### **Large Landsat Puzzle Created by UW Researcher Introduces Wyoming’s Geography to Children**

...WyomingView, a program hosted by the University of Wyoming’s Wyoming Geographic Information Science Center (WyGISC), was invited to showcase the geography of the state, using satellite images, to children and adults at an event organized by the Wyoming State Museum in Cheyenne. WyomingView, a program funded by AmericaView and the U.S. Geological Survey (USGS), promotes remote sensing science and applications through educational outreach and applied research in Wyoming. The Landsat series of civilian satellites has been collecting Earth observation data since 1972 and constitutes the longest and most extensive archive of images that provide valuable information about Earth. Landsat satellites are built and launched by NASA and operated by the USGS. Preschool- and elementary school-age children and their parents received a glimpse of Wyoming’s diverse and rich geography by assembling a giant floor puzzle of the state as part of the recent “Earth Extravaganza” Family Day event. The fully assembled puzzle measures 12 feet by 10.5 feet, is made of PVC plastic, and is a mosaic of images collected from Landsat satellites by the USGS for each state...

University of Wyoming - Apr 12, 2023

## **STEM / Workforce Resources & Opportunities**

### **White House Office of Science and Technology Policy Celebrates World Quantum Day With Activities to Connect K-12 Students and Teachers with Quantum Science**

...The National Q-12 Education Partnership (Q-12), spearheaded by OSTP and the National Science Foundation (NSF), has engaged in several activities to connect K-12 students and teachers with quantum science. Take a look at the new video released to celebrate World Quantum Day 2023. The American Physical Society, in partnership with the National Q-12 Education Partnership, launched a new initiative called Quantum To-Go that connects practicing quantum scientists with K-12 and community college educators and students for virtual classroom visits and in-person lab tours. This initiative trains quantum scientists on best practices. NSF, the Department of Energy (DOE), NASA and industry support QuanTime, a collection of free K-12 quantum classroom activities that can be completed in a single class period...

The White House - Apr 14, 2023

## **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 - Apr 13, 2023

## **Federal Register: Request for Information (RFI)**

### **National Cybersecurity Center of Excellence Mitigating Cybersecurity Risk in Telehealth Smart Home Integration**

...The National Institute of Standards and Technology (NIST) invites organizations to provide letters of interest describing products and technical expertise to support and demonstrate security platforms for the Mitigating Cybersecurity Risk in Telehealth Smart Home Integration project. This notice is the initial step for the National Cybersecurity Center of Excellence (NCCoE) in collaborating with technology companies to address cybersecurity challenges identified under the Mitigating Cybersecurity Risk in Telehealth Smart Home Integration project. Collaborative activities will commence as soon as enough completed and signed letters of interest have been returned to address all the necessary components and capabilities, but no earlier than May 17, 2023...

Federal Register - Apr 15, 2023

## **Upcoming Conferences / Workshops / Webinars**

### **Celebrating National Small Business Week: Overview of the NIST Small Business Cybersecurity Corner | May 2nd**

...The NCCoE is celebrating National Small Business Week by shining a spotlight on our NIST Small Business Cybersecurity Corner website. NIST has been working on behalf of the small to medium-sized business (SMB) community for many years. Join us on May 2, 2023 for a 30-minute overview of the NIST Small Business Cybersecurity Corner. We'll not only provide an overview of what resources are currently available on the site, but will give attendees an opportunity to express what resources they want to see there. Tuesday, May 02, 2023 2:00–2:45pm...

National Institute of Standards and Technology - Apr 20, 2023

### **Data Analytics for Small Businesses: How to Manage Privacy Risks | May 4th**

...Data analytics are being promoted as a method to help small businesses increase innovation, enhance customer experience, save money, and improve their brand. If your small business is using data analytics it is important to be aware of the privacy implications of these activities. Join us during National Small Business Week for an interactive discussion about how to manage privacy risks associated with data analytics. Thursday, May 04, 2023 3:00–3:45pm...

National Institute of Standards and Technology - Apr 20, 2023

### **NCCoE Learning Series: Security Segmentation for Small Manufacturers | Jun 28th**

...As manufacturers are increasingly targeted in cyberattacks, any gaps in cybersecurity leave small manufacturers vulnerable to attacks. Small manufacturers tend to operate facilities with limited staff and resources, often causing cybersecurity to fall by the wayside as something that costs too much time and money. Join us on June 28, 2023 from 2:00-2:45 p.m. ET where we will discuss the NCCoE's most recent manufacturing publication, NIST Cybersecurity White Paper: Security Segmentation in a Small Manufacturing Environment. The paper outlines a practical six-step approach, incorporating the NIST Cybersecurity Framework (CSF) and NIST IR 8183 Cybersecurity Framework Manufacturing Profile ("CSF Manufacturing Profile"), that manufacturers can follow to implement security segmentation and mitigate cyber vulnerabilities in their manufacturing environments. Wednesday, June 28, 2023 2:00–2:45pm...

National Institute of Standards and Technology - Apr 20, 2023

**Note:** Any mention in the text of commercial, non-profit, academic partners, or their products, or references is for information only; it does not imply endorsement or recommendation by any U.S. Government agency.

## **Innovation Through NITRD Coordination**

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

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