

DARPA News RSS

2014/10/28 DARPA Circuit Achieves Speeds of 1 Trillion Cycles per Second, Earns Guinness World Record

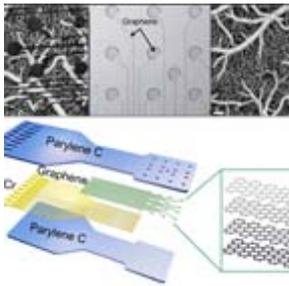
Tuesday, October 28, 2014, 10:38:45 AM | DARPA Public Affairs Office



Officials from Guinness World Records today recognized DARPA's Terahertz Electronics program for creating the fastest solid-state amplifier integrated circuit ever measured. The ten-stage common-source amplifier operates at a speed of one terahertz (10^{12} GHz), or one trillion cycles per second—150 billion cycles faster than the existing world record of 850 gigahertz set in 2012.

2014/10/20 Atom-width Graphene Sensors Could Provide Unprecedented Insights into Brain Structure and Function

Monday, October 20, 2014, 12:37:09 PM | DARPA Public Affairs Office



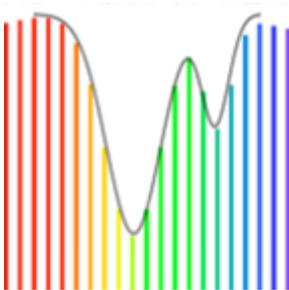
Understanding the anatomical structure and function of the brain is a longstanding goal in neuroscience and a top priority of President Obama's brain initiative.

Electrical monitoring and stimulation of neuronal signaling is a mainstay technique for studying brain function, while emerging optical techniques—which use photons instead of electrons—are opening new opportunities for visualizing neural network structure and exploring brain functions. Electrical and optical techniques offer distinct and complementary advantages that, if used together, could offer profound benefits for studying the brain at high resolution. Combining these technologies is

challenging, however, because conventional metal electrode technologies are too thick (>500 nm) to be transparent to light, making them incompatible with many optical approaches.

2014/10/08 Using Light Frequencies to Sniff Out Deadly Materials from a Distance

Wednesday, October 08, 2014, 10:58:15 AM | DARPA Public Affairs Office



DARPA yesterday issued a solicitation for proposals responsive to its Spectral Combs from UV to THz (SCOUT) program, which seeks new capabilities for highly sensitive remote detection of multiple biological or chemical agents in liquid or gaseous forms. A proposers day is set for Oct. 15 via webcast.

2014/10/07 GXV-T Imagines Future Armored Ground Vehicles that Could Increase Survivability through Improved Situational Awareness

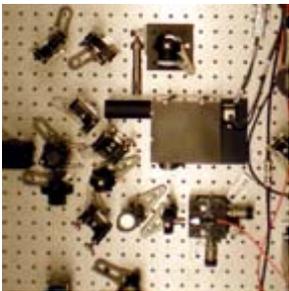
Tuesday, October 07, 2014, 11:09:30 AM | DARPA Public Affairs Office



One of the key goals of DARPA's Ground X-Vehicle Technologies (GXV-T) program is improving the survivability of ground-based armored fighting vehicles through crew augmentation. Crew augmentation involves improved physical and electronically assisted situational awareness for crew and passengers. It also involves semi-autonomous driver assistance and automation of key crew functions similar to capabilities found in modern commercial airplane cockpits to reduce onboard crew and training requirements.

2014/09/30 DARPA Technology Identifies Counterfeit Microelectronics

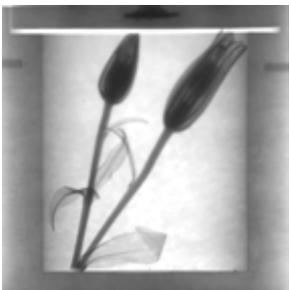
Tuesday, September 30, 2014, 9:23:03 AM | DARPA Public Affairs Office



Advanced software and equipment to aid in the fight against counterfeit microelectronics in U.S. weapons and cybersecurity systems has been transitioned to military partners under DARPA's Integrity and Reliability of Integrated Circuits (IRIS) program. Researchers with SRI International, an IRIS performer, announced today they have provided Advanced Scanning Optical Microscope (ASOM) technology to the Naval Surface Warfare Center (NSWC) in Crane, Indiana, where it will join an arsenal of laboratory equipment used to ensure the integrity of microelectronics.

2014/09/24 Neutron Vision: Going Beyond X-Rays for Advanced Imaging in the Field

Friday, September 26, 2014, 7:56:06 AM | DARPA Public Affairs Office



Seeking to expand the nation's capability to detect and identify materials that are not easily visualized by conventional imaging technologies, DARPA today released an announcement inviting proposals to develop portable, next-generation imaging tools that combine the complementary benefits of X-ray and neutron radiography.

2014/09/18 Seeing Through the Fog (and Dust and Snow) of War

Thursday, September 18, 2014, 12:11:29 PM | DARPA Public Affairs Office

Degraded visibility—which encompasses diverse environmental conditions including severe weather, dust kicked up during takeoff and landing and poor visual contrast among different parts of terrain—often puts both the safety and effectiveness of tactical helicopter operations at risk. Current sensor systems that can provide the necessary visualization through obscurants struggle with latency and are too large, heavy and power-intensive to comply with military rotary wing operations.



2014/09/16 Lightweight, Soft Exosuit Aims to Prevent Musculoskeletal Injury in Warfighters

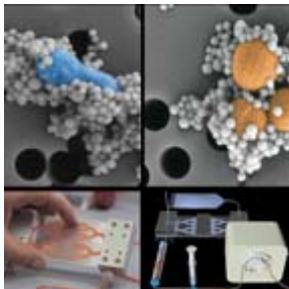
Tuesday, September 16, 2014, 9:20:47 AM | DARPA Public Affairs Office



Harvard University's Wyss Institute for Biologically Inspired Engineering is continuing development of a lightweight, soft exosuit for DARPA's Warrior Web program, which is aimed at creating technologies that mitigate musculoskeletal injuries among warfighters while improving performance. The Wyss team is seeking to integrate component technologies developed in separate Warrior Web efforts into a prototype suit that offers expanded capabilities. DARPA plans to test the final suit in appropriate mission profiles under realistic loads to evaluate performance.

2014/09/15 Blood-cleansing "Artificial Spleen" Technology Could Increase Survival Odds for Future Sepsis Patients

Monday, September 15, 2014, 7:57:47 AM | DARPA Public Affairs Office

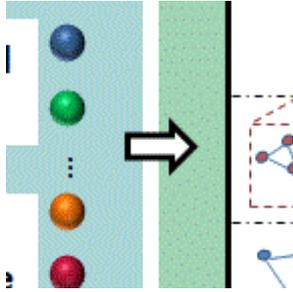


Sepsis—a life-threatening over-reaction by the immune system to infection—afflicts 18 million people a year worldwide and kills between 30 and 50 percent of them. Sepsis poses a significant threat to warfighters who suffer combat injuries that predispose them to infection. Antibiotics can kill sepsis-inducing microbes but their overuse is contributing to the threat of drug-resistant microbes and they don't neutralize the toxins that some pathogens leave behind. Commercial dialysis equipment can remove toxins from the blood but is not built for routine use in theater.

2014/09/11 New Mathematical Tools Seen as Key to Maximizing Value of Scientific Data and Accelerating Discovery

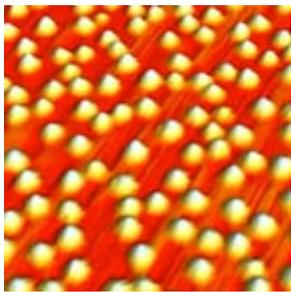
Thursday, September 11, 2014, 10:21:18 AM | DARPA Public Affairs Office

The exponential growth of diverse science data represents an unprecedented opportunity to make substantial advances in complex science and engineering, such as discovery of novel materials or drugs. However, without tools to unify principles, results, models and other kinds of data into a single computational representation, it is difficult to relate data from any one scientific problem or area to the broader body of knowledge.



2014/09/10 DARPA Program “Grows” Lasers Directly on Silicon-Based Microchips

Wednesday, September 10, 2014, 7:48:15 AM | DARPA Public Affairs Office



DARPA’s Electronic-Photonic Heterogeneous Integration (E-PHI) program has successfully integrated billions of light-emitting dots on silicon to create an efficient silicon-based laser. The breakthrough, achieved by researchers working on the program at the University of California, Santa Barbara (UCSB), will enable the production of inexpensive and robust microsystems that exceed the performance capabilities of current technologies.

2014/09/05 GXV-T Envisions Future Armored Ground Vehicles that Could Sprint, Dodge and Shield Their Way Out of Danger

Friday, September 05, 2014, 12:00:50 PM | DARPA Public Affairs Office

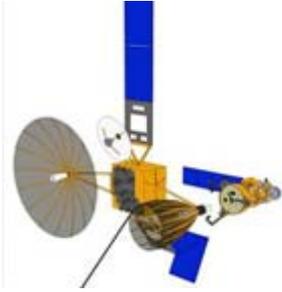


One of the key goals of DARPA’s Ground X-Vehicle Technology (GXV-T) program is improving the survivability of ground-based armored fighting vehicles by increasing vehicle agility. Vehicle agility involves the ability to autonomously avoid incoming threats, either by rapidly moving out of the way or reconfiguring the vehicle so incoming threats have a low probability of hitting and penetrating—all without injuring the occupants in the process. This concept video illustrates three of many potential approaches: active repositioning of armor, burst acceleration and suspensions that would enable the vehicle to dodge.

2014/09/03 Wanted: Insights to Guide Creation of Robotic Satellite-Servicing Capabilities in Geostationary Earth Orbit

Wednesday, September 03, 2014, 7:24:01 AM | DARPA Public Affairs Office

An increasing number of expensive, mission-critical satellites are launched every year into geostationary Earth orbit (GEO), approximately 22,000 miles (36,000 kilometers) above the Earth. Unlike objects in low Earth orbit (LEO), such as the Hubble Space Telescope, satellites in GEO are essentially unreachable with current technology. As a result, these satellites are designed to operate without any upgrades or repairs for their entire lifespan—a methodology that demands increased size, complexity and cost. The ability to safely and cooperatively interact with satellites in GEO would immediately revolutionize military and commercial space



operations alike, lowering satellite construction and deployment costs and improving satellite lifespan, resilience and reliability.

2014/08/29 DARPA Open Catalog Expands Listings to Include Research into Biological and Fundamental Sciences

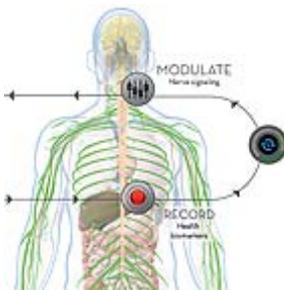
Friday, August 29, 2014, 7:36:46 AM | DARPA Public Affairs Office



The DARPA Open Catalog—a six-month-old public web portal that organizes and shares the results of DARPA research—today expanded its research listings to include peer-reviewed publications and other material from the agency's Biological Technologies Office (BTO) and Defense Sciences Office (DSO). Along with that expansion, the website now offers open source software, peer-reviewed publications and other research materials from the majority of programs in the agency's Information Innovation Office (I2O) that have public information to share.

2014/08/26 President Obama Highlights New DARPA Program Aimed at Developing Novel Therapies Customized to Individual Patients

Tuesday, August 26, 2014, 11:54:06 AM | DARPA Public Affairs Office

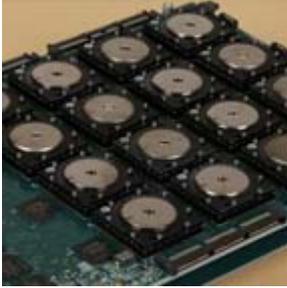


The body's peripheral nervous system constantly monitors the status of internal organs and helps regulate biological responses to infection, injury or other imbalances. When this regulatory process goes awry due to injury or illness, peripheral nerve signals can actually exacerbate a condition, causing pain, inflammation or immune dysfunction.

2014/08/07 SyNAPSE Program Develops Advanced Brain-Inspired Chip

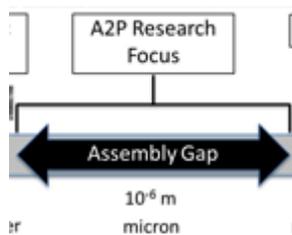
Monday, August 25, 2014, 7:37:49 AM | DARPA Public Affairs Office

DARPA-funded researchers have developed one of the world's largest and most complex computer chips ever produced—one whose architecture is inspired by the neuronal structure of the brain and requires only a fraction of the electrical power of conventional chips.



2014/08/22 Atoms to Product: Aiming to Make Nanoscale Benefits Life-sized

Monday, August 25, 2014, 7:04:31 AM | DARPA Public Affairs Office



Many common materials exhibit different and potentially useful characteristics when fabricated at extremely small scales—that is, at dimensions near the size of atoms, or a few ten-billionths of a meter. These “atomic scale” or “nanoscale” properties include quantized electrical characteristics, glueless adhesion, rapid temperature changes, and tunable absorption and scattering that, if available in human-scale products and systems, could offer potentially revolutionary defense and commercial capabilities. Two as-yet insurmountable technical challenges, however, stand in the way: Lack of knowledge of how to retain nanoscale properties in materials at larger scales, and lack of assembly capabilities for items between nanoscale and 100 microns—slightly wider than a human hair.

2014/08/18 New Ground X-Vehicle Technology (GXV-T) Program Aims to Break the “More Armor” Paradigm for Protection

Monday, August 18, 2014, 10:54:19 AM | DARPA Public Affairs Office



For the past 100 years of mechanized warfare, protection for ground-based armored fighting vehicles and their occupants has boiled down almost exclusively to a simple equation: More armor equals more protection. Weapons’ ability to penetrate armor, however, has advanced faster than armor’s ability to withstand penetration. As a result, achieving even incremental improvements in crew survivability has required significant increases in vehicle mass and cost.

2014/08/15 CHIKV Challenge Asks Teams to Forecast the Spread of Infectious Disease

Friday, August 15, 2014, 8:04:00 AM | DARPA Public Affairs Office

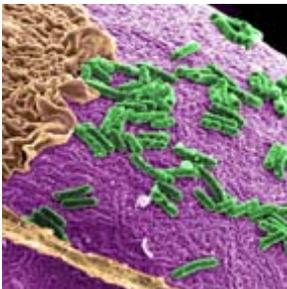
The Chikungunya virus (CHIKV) is on the move. Spread among humans by mosquitoes, and spread across geographic boundaries by humans who travel, the virus—which causes a debilitating illness—is now expanding through the Western Hemisphere. Governments and health organizations could take proactive steps to limit its spread if they had accurate forecasts of where and when it would appear. DARPA’s CHIKV Challenge asks



teams to create models to deliver such forecasts for all of the countries and territories in the Americas and the Caribbean over a six-month period starting in September 2014. The winning team will take home \$150,000, with additional cash prizes for runners-up. Full details, rules, and registration instructions for the Challenge are available at: <http://www.innocentive.com/DARPAChikvChallenge>.

2014/07/29 Building the Foundation for Future Synthetic Biology Applications with BRICS

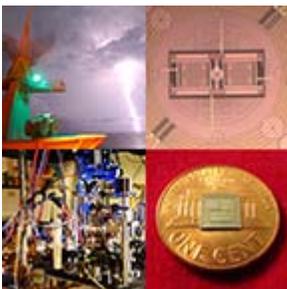
Tuesday, July 29, 2014, 2:23:04 PM | DARPA Public Affairs Office



The development of increasingly sophisticated techniques and tools to sequence, synthesize and manipulate genetic material has led to the rapidly maturing discipline of synthetic biology. To date, work in synthetic biology has focused primarily on manipulating individual species of domesticated organisms to perform specific tasks, such as producing medicines or fuels. These species tend to be both relatively fragile (requiring precise environmental conditions to survive) and relatively unstable (subject to losing their engineered advantages through genetic attrition or recombination). The costs of maintaining required environmental controls and detecting and compensating for genetic alterations are substantial and severely limit the widespread application of synthetic biology to U.S. national security missions.

2014/07/24 Beyond GPS: 5 Next-Generation Technologies for Positioning, Navigation & Timing (PNT)

Thursday, July 24, 2014, 9:20:39 AM | DARPA Public Affairs Office



It is difficult to imagine the modern world without the Global Positioning System (GPS), which provides real-time positioning, navigation and timing (PNT) data for countless military and civilian uses. Thanks in part to early investments that DARPA made to miniaturize GPS technology, GPS today is ubiquitous. It's in cars, boats, planes, trains, smartphones and wristwatches, and has enabled advances as wide-ranging as driverless cars, precision munitions, and automated supply chain management.

2014/07/15 Work Commences on Experimental Spaceplane (XS-1) Designs

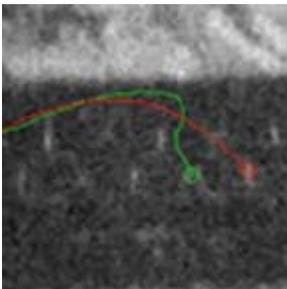
Tuesday, July 15, 2014, 1:41:37 PM | DARPA Public Affairs Office

DARPA created its Experimental Spaceplane (XS-1) program to create a new paradigm for more routine, responsive and affordable space operations. The agency has taken its first major step toward that goal by awarding prime contracts for Phase 1 of XS-1 to three companies: The Boeing Company, Masten Space Systems and Northrop Grumman Corporation.



2014/07/10 EXACTO Demonstrates First-Ever Guided .50-Caliber Bullets

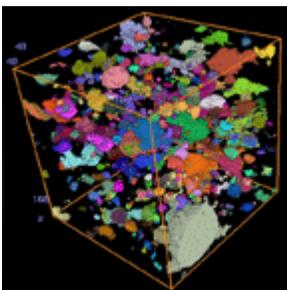
Thursday, July 10, 2014, 12:24:39 PM | DARPA Public Affairs Office



DARPA's Extreme Accuracy Tasked Ordnance (EXACTO) program recently conducted the first successful live-fire tests demonstrating in-flight guidance of .50-caliber bullets. This video shows EXACTO rounds maneuvering in flight to hit targets that are offset from where the sniper rifle is aimed. EXACTO's specially designed ammunition and real-time optical guidance system help track and direct projectiles to their targets by compensating for weather, wind, target movement and other factors that could impede successful hits.

2014/07/10 On a Fast Track: DARPA Plans to Speed Process for Developing New Materials

Thursday, July 10, 2014, 8:51:35 AM | DARPA Public Affairs Office



Military platforms—such as ships, aircraft and ground vehicles—rely on advanced materials to make them lighter, stronger and more resistant to stress, heat and other harsh environmental conditions. Currently, the process for developing new materials to field in platforms frequently takes more than a decade. This lengthy process often means that developers of new military platforms are forced to rely on decades-old, mature materials because potentially more advanced materials are still being tested and aren't ready to be implemented into platform designs.

2014/07/09 Restoring Active Memory Program Poised to Launch

Tuesday, July 08, 2014, 1:09:13 PM | DARPA Public Affairs Office

DARPA has selected two universities to initially lead the agency's Restoring Active Memory (RAM) program, which aims to develop and test wireless, implantable "neuroprosthetics" that can help servicemembers, veterans, and others overcome memory deficits incurred as a result of traumatic brain injury (TBI) or disease.



2014/07/08 Squad X Infrastructure Study Seeks Innovative Ways to Improve Dismounted Squads' Tactical Advantage

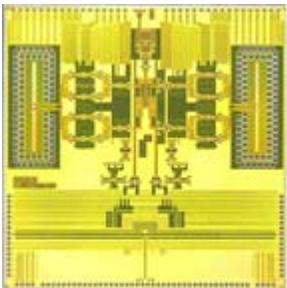
Tuesday, July 08, 2014, 7:57:50 AM | DARPA Public Affairs Office



Today's dismounted squads use many different technologies to gather and share information. In many instances, however, these valuable but disparate inputs are not well integrated, leaving squad members without the degree of real-time situational awareness and support for decision-making that warfighters typically experience while on board aircraft and ships and in vehicles.

2014/06/30 ELASTx Stretches Potential for Future Communications Technologies with Fully Integrated All-Silicon "System on a Chip" Transmitter

Monday, June 30, 2014, 10:33:47 AM | DARPA Public Affairs Office



Many existing compact, high-data-rate millimeter-wave wireless communications systems use integrated circuits (ICs) made with gallium arsenide (GaAs) or gallium nitride (GaN). These circuits provide high power and efficiency in small packages but are costly to produce and difficult to integrate with silicon electronics that provide most other radio functions. Silicon ICs are less expensive to manufacture in volume than those with gallium compounds but until now have not demonstrated sufficient power output and efficiency at millimeter-wave frequencies used for communications and many other military applications, such as radar and guidance

systems.

2014/06/26 The DARPA Robotics Challenge Continues June 2015 in Southern California

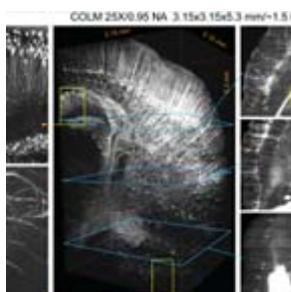
Thursday, June 26, 2014, 11:15:24 AM | DARPA Public Affairs Office

From June 5-6, 2015, California will be the stage for the DARPA Robotics Challenge (DRC) Finals. Teams from around the world will meet at Fairplex in Pomona to compete for the \$2 million prize to be awarded to the team that best demonstrates human-supervised robot technology for disaster response.



2014/06/19 Advanced CLARITY Method Offers Faster, Better Views of Entire Brain

Thursday, June 19, 2014, 10:03:03 AM | DARPA Public Affairs Office



For decades, researchers' understanding of brain structure and function has remained fragmented due to difficulties integrating observations and insights at the levels of individual brain cells, neural circuits and systems-level information processing. Now a new research protocol promises to help overcome this barrier by allowing scientists to visualize the brain across multiple scales. As described in a newly published scientific report, DARPA-funded performers have developed a new protocol that incorporates two major technological advances that enable more efficient application of the CLARITY method to study brain tissue.

2014/06/16 Defense Sciences Office: at the Edge of Science and National Security

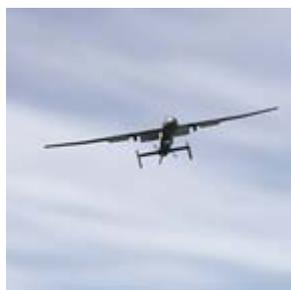
Monday, June 16, 2014, 10:26:48 AM | DARPA Public Affairs Office



Scientists and engineers in DARPA's Defense Sciences Office (DSO) promote and exploit new discoveries across the frontiers of physics, chemistry, and mathematics to identify and accelerate potentially game-changing technologies for U.S. national security. After recently spinning off biological technologies into a new office, DSO's investment portfolio, which continues to create new materials and explore the boundaries of physical phenomena, is expanding to include novel approaches to understanding, predicting, designing, and developing engineered complex systems.

2014/06/11 DARPA-Navy Agreement to Develop Tern Concept

Wednesday, June 11, 2014, 8:57:57 AM | DARPA Public Affairs Office



DARPA and the Office of Naval Research (ONR) recently signed a Memorandum of Agreement (MOA) on a joint DARPA/Navy research and development program called "Tern." This joint effort builds upon the existing work of DARPA's Tactically Exploited Reconnaissance Node program, or "TERN," which has been exploring concepts for a long-endurance and long-range aircraft that would operate from a variety of Navy ships.

2014/06/09 From Close Air Support to Fire Suppression

Monday, June 09, 2014, 10:09:54 AM | DARPA Public Affairs Office



In the heat of battle, lives can depend on being able to coordinate troop positions safely while directing aircraft to provide close air support for ground forces. DARPA's Persistent Close Air Support (PCAS) program aims to help overcome those challenges by providing warfighters with advanced digital tools for situational awareness and targeting in place of legacy communications systems and traditional paper maps.

2014/06/05 DARPA Z-Man Program Demonstrates Human Climbing Like Geckos

Thursday, June 05, 2014, 12:08:24 PM | DARPA Public Affairs Office



DARPA's Z-Man program has demonstrated the first known human climbing of a glass wall using climbing devices inspired by geckos. The historic ascent involved a 218-pound climber ascending and descending 25 feet of glass, while also carrying an additional 50-pound load in one trial, with no climbing equipment other than a pair of hand-held, gecko-inspired paddles. The novel polymer microstructure technology used in those paddles was developed for DARPA by Draper Laboratory of Cambridge, Mass.

2014/06/03 Cyber Grand Challenge Announces 1st Group of Teams, Final Event at DEF CON

Monday, June 02, 2014, 1:29:48 PM | DARPA Public Affairs Office



Computer security experts from academia, industry and the larger security community have organized themselves into more than 30 teams to compete in DARPA's Cyber Grand Challenge—a first-of-its-kind tournament designed to speed the development of automated security systems able to defend against cyberattacks as fast as they are launched. DARPA also announced today that it has reached an agreement to hold the 2016 Cyber Grand Challenge final competition in conjunction with DEF CON, one of the largest computer security conferences in the world.

2014/05/28 Microsystems Technologies Office: Creating A New Electronics Revolution For National Defense

Wednesday, May 28, 2014, 9:52:52 AM | DARPA Public Affairs Office

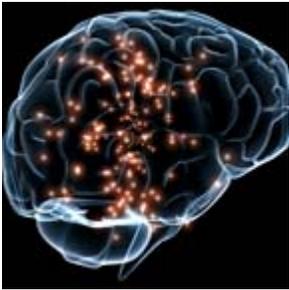
Since its inception in 1992, DARPA'S Microsystems Technology Office (MTO) has helped create and prevent strategic surprise through its investments in compact microelectronic components such as microprocessors, microelectromechanical systems (MEMS), and photonic devices. MTO's revolutionary work applying these advanced capabilities in areas such as wide-band gap materials, phased array radars, high-energy lasers and



infrared imaging have helped the United States establish and maintain technological superiority for more than two decades.

2014/05/27 Journey of Discovery Starts toward Understanding and Treating Networks of the Brain

Tuesday, May 27, 2014, 11:05:42 AM | DARPA Public Affairs Office



Work on DARPA's Systems-Based Neurotechnology for Emerging Therapies (SUBNETS) program is set to begin with teams led by UC San Francisco (UCSF), and Massachusetts General Hospital (MGH). The SUBNETS program seeks to reduce the severity of neuropsychological illness in service members and veterans by developing closed-loop therapies that incorporate recording and analysis of brain activity with near-real-time neural stimulation. The program, which will use next-generation devices inspired by current Deep Brain Stimulation (DBS) technology, was launched in support of President Obama's brain initiative.

2014/05/21 DARPA Demo Day 2014 Highlights Innovative Approaches to Preserving and Expanding U.S. Technological Superiority

Tuesday, May 20, 2014, 1:05:27 PM | DARPA Public Affairs Office



Information technology (IT) is a key enabler for the Defense Department (DoD) and has been a focus area for DARPA since its founding in 1958. DARPA's contributions to modern IT are well-known—perhaps most notably, DARPA is generally credited with developing and prototyping the technology for what is now known as the Internet. But while the DoD currently enjoys IT superiority, that superiority cannot be taken for granted.

2014/05/09 From Idea to Market in Eight Years, DARPA-Funded DEKA Arm System Earns FDA Approval

Friday, May 09, 2014, 3:30:19 PM | DARPA Public Affairs Office

DARPA launched the Revolutionizing Prosthetics program with a radical goal: gain U.S. Food and Drug Administration (FDA) approval for an advanced electromechanical prosthetic upper limb with near-natural control that enhances independence and improves quality of life for amputees. Today, less than eight years after the effort was launched, that dream is a reality; the FDA approved the DEKA Arm System.



2014/05/09 Study on Magnetic Compass Orientation in Birds Builds Case for Bio-Inspired Sensors

Friday, May 09, 2014, 7:26:39 AM | DARPA Public Affairs Office



Researchers working on DARPA's Quantum Effects in Biological Environments (QuBE) program have shown that the electromagnetic noise that permeates modern urban environments can disrupt a bird's internal magnetic compass. The findings settle a decades-long debate into whether low-level, artificial electric and magnetic fields can affect biological processes in higher vertebrates. For DARPA, the results hint at a new class of bio-inspired sensors at the intersection of biology and quantum physics.

2014/05/02 DARPA Young Faculty Award Members Get Hands-On Look at How Military Technology Supports Troops

Friday, May 02, 2014, 2:18:55 PM | DARPA Public Affairs Office



Preserving and expanding the technological superiority of the U.S. military requires sustaining a pipeline of talented scientists, engineers and mathematicians who pursue high-risk, high-payoff fundamental research in disciplines that address critical Department of Defense (DoD) and national security needs. DARPA's Young Faculty Award (YFA) program supports that goal by helping promising tenure-track faculty members better understand the federal research and development process generally and Department of Defense (DoD) and national security research needs in particular.

2014/05/04 Service Academies Innovation Challenge Showcases Practical, Potentially Transformative Technologies

Friday, May 02, 2014, 1:38:38 PM | DARPA Public Affairs Office

DARPA works to ensure the technological superiority of U.S. military forces, and the agency continually seeks new sources of talent to accomplish that goal. The nation's three military Service academies are a promising source of that talent. These institutions immerse the next generation of military leaders in a unique environment that blends academic excellence and deep understanding of current and future military needs. To better cultivate the great potential of these young officers-to-be and encourage their career-long collaboration



with DARPA, the agency last week hosted the first DARPA Service Academies Innovation Challenge.

2014/04/24 By Restoring Sense of Touch to Amputees, HAPTIX Seeks to Overcome Physical and Psychological Effects of Upper Limb Loss

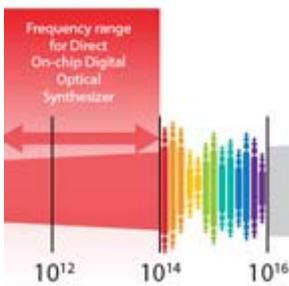
Thursday, April 24, 2014, 7:42:40 AM | DARPA Public Affairs Office



To understand the meaning of “proprioception,” try a simple experiment. Close your eyes and lift your right arm above your head. Then, move it down so that it’s parallel to the ground. Make a fist and release it. Move it forward, and then swing it around behind you like you’re stretching. Finally, freeze in place, open your eyes, and look. Is your arm positioned where you thought it would be?

2014/04/22 Chip-Sized Digital Optical Synthesizer to Aim for Routine Terabit-per-second Communications

Tuesday, April 22, 2014, 8:19:21 AM | DARPA Public Affairs Office



In the 1940s, researchers learned how to precisely control the frequency of microwaves, which enabled radio transmission to transition from relatively low-fidelity amplitude modulation (AM) to high-fidelity frequency modulation (FM). This accomplishment, called microwave frequency synthesis, brought about many advanced technologies now critical to the military, such as wireless communications, radar, electronic warfare, atomic sensors and precise timing. Today, optical communications employ techniques analogous to those of pre-1940 AM radio, due to the inability to control frequency precisely at optical frequencies, which are typically 1,000 times higher than microwaves. The higher frequency of light, however, offers potential for 1,000-fold increase in available bandwidth for communications and other applications.

2014/04/18 ALIAS Seeks to Provide Portable, Flexible Advanced Autopilot Capabilities

Friday, April 18, 2014, 10:47:08 AM | DARPA Public Affairs Office

Military aircraft today have evolved over a period of decades to have ever more automated capabilities, improving mission success and safety. At the same time, these aircraft still present challenging and complex interfaces to operators, and despite demanding training regimens, operators can experience extreme workload



during emergencies and other unexpected situations. Avionics and software upgrades can help, but can cost tens of millions of dollars per aircraft, which limits the rate of developing, testing and fielding new automation capabilities for those aircraft.

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