



Center of Excellence

WIRELESS AND INFORMATION TECHNOLOGY

AT STONY BROOK UNIVERSITY

NEWSLETTER

JANUARY 2016

CEWIT is an unparalleled resource, advancing the science and technology underlying the next epoch of the information revolution.



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JANUARY COVERAGE: Boost for Long Island Manufacturing - CEWIT Industry Partners Making Headway - Research Recognitions, Advances

This first month of the new year sparks the announcement of 2016 events, a year in technology reviews, and forecasts of new research developments and industry projections for the upcoming year. With no shortage of save the dates, tech trends to catch up on, software programs to learn, business techniques to perfect, and research advances to familiarize with, smart networking and big picture thinking are top priorities.

That being said, here is what CEWIT is taking advantage of: Our colleagues at the New York Academy of Sciences hosting their 10th Annual Machine Learning Symposium, the Institute of Advanced Computational Science Spring 2016 Seminar Series, the Advanced Energy Center's AEC2016 Conference; getting familiar with the modernization the of the grid with the U.S. Department of Energy and Stony Brook University's Smart Grid Innovation Center and the new Center for Advanced Technology, the University's role in the Innovation Ecosystem with Dr. David Ferguson, nanotechnology with Dr. Alexander Orlov; learning how the U.S. Commerce Department's Long Island Export Assistance Center can help businesses, and how the Stony Brook University MEP brings good news for Long Island manufactures, as well as gearing up for the CEWIT2016 Conference this November.



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The Next Big Thing:
CEWIT2016

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Build Your Network Expand Your Knowledge



Connect with our international business culture, academic partners, and R&D expertise.

Work with our Center of Excellence in Wireless and Information Technology (CEWIT) to enhance your technology and grow your business. With over 175 organizations and 500 attendees participating in CEWIT Conferences, 2016 opportunities to sponsor, exhibit, take the podium, and interface through B2B platforms are more profitable and sought after than ever.

Learn more about the CEWIT2016 Conference.

November 2 & 3, 2016 at the Melville Marriott Long Island, the [Call for Papers](#), and [Early Bird Sponsor & Exhibitor Rates](#) now underway, www.cewit.org/conference2016.



BOOST FOR LONG ISLAND MANUFACTURING

Long Island Lands Manufacturing Extension Partnership
& Helps Regional Businesses Tap International Markets

STONY BROOK UNIVERSITY AWARDED \$5M STATE CONTRACT FOR MANUFACTURING EXTENSION PARTNERSHIP

Stony Brook University has been awarded nearly \$5 million in state and federal funding over the next five years as part of a program to foster manufacturing in the region, with a focus on next-generation technologies and the life sciences.

The Stony Brook University team is one of New York State's 11 Manufacturing Extension Partnership centers by Empire State Development Corporation. The Centers will advise small to mid-sized manufacturers on best practices and the use of efficient technology.

The Hollings Manufacturing Extension Partnership (MEP) is a part of the National Institute of Standards and Technology (NIST), a U.S. Department of Commerce agency committed to strengthening U.S. manufacturing, continually evolving to meet the changing needs of manufacturers. Through its services and partnerships it has had a profound impact on the growth of well-paying jobs, the development of dynamic manufacturing communities, and the enhancement of American innovation and global competitiveness.

With a particular focus on small and mid-sized enterprises, of which represent nearly 99% of manufacturing firms in the U.S., MEP puts manufacturers in a position to develop and retain new products and customers, expand into global markets, adopt new technology, and reshore production. MEP's nationwide network is a public/private partnership with over 400 centers and more than 1,300 technical experts working to sustain and grow America's manufacturing base.

Yacov Shamash, Vice President for Economic Development at Stony Brook University, said "this award will help manufacturers in our region to be more efficient and do things at a lower cost. Stony Brook University has a lot of economic development tools for

technology and biotechnology companies, and now we'll use those tools to support Long Island's manufacturing sector as well."

Stony Brook University will partner with the Long Island Forum for Technology (LIFT) and other Long Island institutions, including New York Institute of Technology, Nassau Community College, Suffolk County Community College, Farmingdale State College, and ADDAPT, a manufacturing advocacy group dedicated to retaining, sustaining, attracting and growing manufacturing on Long Island by serving as a strong advocate, a hub for information, and a strategic growth partner.

THE DEBRIEF: SUSAN SADOCHA HELPS INNOCENTS ABROAD

As director of the U.S. Commerce Department's Long Island Export Assistance Center, you might say Susan Sadocha is in the foreign intelligence business, with firsthand experience – so far – in more than 15 countries. The LIU graduate, who earned a master's in international relations at Boston University and did 18 years with the U.S. Department of Agriculture's Foreign Agriculture Service, talks about her essential, not-so-secret service for Long Island businesses selling abroad. In her words:

Mission Briefing: We work with Long Island companies looking to increase sales of goods or services internationally, or to enter new markets. We can help them increase sales in existing markets or help them understand what they need to enter new ones – everything from understanding tariffs to in-depth counseling on a total export strategy.

Keep Moving: I came over from [the Agriculture Department] in 2014. Right now we're in transition, moving our satellite office into the Zarb School of Business at Hofstra University. We used to be at (SUNY) Old Westbury.

Specialists: We actually have a strategic partnership with the Zarb School. We develop strategic partnerships with many local organizations working with the same population we do. With ADDAPT and the Long Island Forum for Technology, we co-host events and educational outreach and bring international delegations through Long Island. It's a way of leveraging our expertise and resources with our partners' expertise and resources, all to help Island companies meet their exporting objectives.

Secret Weapons: One advantage we offer are the foreign service officers we have stationed overseas. They're like diplomats who work in our embassies and are there specifically to help U.S. companies work in those markets. That's our value added. I can facilitate connections with colleagues who understand the regulatory atmosphere, the culture, everything you need to make a market entry.

Cool Gadgets: We have our iPhones and iPads and we can stay on top of information real-time. Using this mobile technology has really helped – if I'm in a meeting with a client, I can develop that record and connect with a person in whatever country so they can follow it. Now they get a message that says, "Susan is in a meeting with such-and-such company, which is interested in moving into this market," and they'll know exactly what we're talking about.

Plot Twist: We had one major new initiative in the past year: The Commerce Department hosted a number of national events called Discover Global Markets. These two-day conferences brought together U.S. companies for educational seminars and B2B meetings, including meetings with those Commerce Department officers from overseas. There was a conference in New York City focused on China and another in Dallas focused on e-commerce. This was a huge initiative to really help companies understand what markets are out there and what they need to do if they want to export.

The Long Island Connection: We obviously haven't helped every Long Island exporter, but our client base in a given year is about 150 companies. Some of them may be looking for full-blown, in-depth counseling, some might just have a few questions. When it comes to in-depth counseling, I'd say 25 is a good number for a given year.

Foreign Intrigue: In 2015, we saw continuous interest from Long Island companies looking to export. This has continued for years, even when the recession was in place. They're looking to expand their markets so all their eggs are not in one basket. So, every year, we get an increasing number of questions about going into new international markets.

Mission to Germany: Hannover Messe (April 25-29 in Hannover, Germany) is the largest industrial trade show in the world. Usually, there are over 200,000 attendees from all around the globe. It's a huge opportunity: The United States is the 2016 "country of honor" and President Obama will be attending. There will be a U.S. pavilion with booths for energy, research, technology ... we're looking to promote really strong, really advanced technology companies, set up meetings with our colleagues from overseas and engage in a lot of B2B match making.

New Recruits: We already have several Long Island companies that are planning to attend, representing energy, research and industrial automation. Those are only some of the industries where U.S. companies and Long Island companies will be represented. Long Island is known for its research innovations, and we want to make sure that's highlighted at this year's show.

Dr. Yes: In my meetings with companies around Long Island, it's clear they see the international marketplace as a huge positive. There are challenges on Long Island – we've all heard about it being difficult and expensive here – but around the globe, everybody looks at the United States as an innovation leader, and we all know about the research institutions we have here. We have very strong partnerships between public and private organizations and they could lead to a very bright future for innovative Long Island companies. We're here to help them make their move to international markets.

INNOVATE LI · JAN 2016



James Harding, Senior Vice President and Chief Technology Officer of Henry Schein, Inc., keynotes the CEWIT2013 Conference on Patient-Centric Technology Leadership, elaborating on the company's unique perspective on technology-driven advances in healthcare and their patient focused efforts for technology solutions to deliver real patient benefits, enabling providers to operate more efficient and profitable practices while providing higher quality care to patients. Mr. Harding furthermore represents Henry Schein, Inc. on CEWIT's Industrial Advisory Board helping the Center to set industrially-relevant priorities for its applied research programs while in turn providing member companies with unparalleled intellectual power and cutting-edge R&D resources to aid in developing real-world solutions.

The Melville-based healthcare products provider has announced it would acquire RxWorks Inc., a leading supplier of veterinary practice management software in Australia, New Zealand, the UK and the Netherlands, its first acquisition of 2016. The healthcare giant announced five international acquisitions in 2015 helping its bottom line consistently reach new heights. The Fortune 500 company – which in 2015 was named to the S&P 500, the prestigious index ranking the 500 largest companies traded on NASDAQ and the New York Stock Exchange – reported an 11.3 percent year-over-year increase in 3Q net profits, up from \$114.8 million (\$1.34 per share) in 2014 to \$127.7 million (\$1.52 per share) in 2015.

Year-over-year third-quarter sales were also up (to \$2.69 billion), with company officials crediting the string of international acquisitions.

INNOVATE LI · JAN 2016

INTELLIGENT PRODUCT SOLUTIONS IS AT IT AGAIN: 'SMART' PILL BOTTLE LETS YOU KNOW WHEN YOU MISS A DOSE

When Manhattan startup AdhereTech needed outside expertise to take production of its wireless “smart pill bottle” to the next level, it turned to the engineers at Hauppauge product design firm Intelligent Product Solutions.

The bottle, now in production, works by using built-in sensors to determine when and how regularly it is used and sends that information to a remote server through cellular networks. It then compares the bottle's usage rate to what the patient should be doing. If a user misses a dose, the bottle issues a reminder with flashing lights, sounds, or an automated text or phone call.

“We needed to build something that could be manufactured on a mass scale,” said AdhereTech cofounder and chief executive Josh Stein. After looking at “every product design shop under the sun,” the startup found Intelligent Product Solutions. Started in 2008 by Mitch Maiman and Paul Severino, two veteran engineers from Symbol Technologies, IPS has worked on designing a host of new products for clients including Zebra Technologies and PepsiCo.

AdhereTech plans to manufacture 10,000 of its patented smart bottles this year, and credits much of the company's progress to the work of Maiman's team.

NEWSDAY · JAN 2016

RESEARCH RECOGNITIONS, ADVANCES

BROOKHAVEN LAB EXPANDS COMPUTATIONAL SCIENCE INITIATIVE, NAMES STONY BROOK UNIVERSITY'S BARBARA CHAPMAN TO HEAD COMPUTER SCIENCE & MATHEMATICS GROUP

Building on its capabilities in data-intensive science, the U.S. Department of Energy's (DOE) Brookhaven National Laboratory has expanded its Computational Science Initiative (CSI). The programs within this initiative leverage computational science, computer science, and mathematics expertise and investments across multiple research areas at the Laboratory—including the flagship facilities that attract thousands of scientific users each year—further establishing Brookhaven as a leader in tackling the "big data" challenges at experimental facilities and expanding the frontiers of scientific discovery.

Key partners in this endeavor include nearby universities such as Columbia, Cornell, New York University, Stony Brook University, and Yale, and companies including IBM Research. In addition to support from the DOE Office of Science and Brookhaven Lab internal investments, the initiative will receive substantial funding from New York State over the next five years.

This combined funding will enable the Initiative to pursue its aggressive growth strategy, both in terms of staffing and in extending its operational and research computing infrastructure. The initiative is led by Kerstin Kleese van Dam Director, Michael Ernst, Deputy Director, and Robert Harrison, Chief Scientist.

A particular focus of CSI's work will be the research, development and deployment of novel methods and algorithms for the timely analysis and interpretation of high volume, high velocity, heterogeneous scientific data created by experimental, observational, and computational facilities to accelerate and advance scientific discovery. "CSI is taking an integrated approach, engaging in leading-edge research, building the research and operational computing facility infrastructure required, and creating multi-disciplinary teams that deliver operational data analysis capabilities to the scientific user communities," said Kleese van Dam, CSI Director and CEWIT2015 Conference Big Data Analytics and Visualization lecturer. (Read More)



Core to the initiative is the new Computer Science and Mathematics effort led by Barbara Chapman, a recent joint appointee at Brookhaven Lab and Stony Brook University. Her team will focus on fundamental research into novel methods and algorithms in support of hypothesis-driven streaming data analysis in high-data-volume and high-data-velocity experimental and computing environments. Further efforts will research new solutions for multi-source streaming data analysis and interpretation, as well as long-term data curation and active reuse.

"Reliability, high performance, and energy efficiency are key drivers for CSI's user communities, so the team's research will address all relevant aspects of streaming data processing from hardware architectures to the application layers," Chapman said.

Chapman is a leading researcher in programming languages, programming models, and compilers and professor of Applied Mathematics and Statistics and Computer Science at Stony Brook University, where she serves as a joint appointee affiliated with the University's Institute for Advanced Computational Science (IACS).

Much of Chapman's current research is focused on OpenMP, an industry standard for shared memory parallel programming that has been broadly accepted by the computing community.

"Barbara is an inspirational leader in the field of computer science, and we are very excited to have her on the team. Her world-renown expertise in programming models and compilers provides a crucial building block in our data-centric computing agenda," said Kleese Van Dam.

Chapman is the founder and CEO of cOMPunity Inc., an organization of researchers who are committed to furthering the work of the OpenMP Architecture Review Board, the organization that maintains and develops this application programming interface.

STONY BROOK PROFESSOR, DR. ALEXANDER ORLOV, NAMED 2016-17 DISTINGUISHED LECTURER FOR AN INTERNATIONAL HONOR SOCIETY FOR SCIENTISTS AND ENGINEERS



Alexander Orlov, PhD, Associate Professor in the Department of Materials Science and Engineering at Stony Brook University, has been named a 2016-17 Distinguished Lecturer by Sigma Xi, an international honor society for scientists and engineers. In this capacity, Dr. Orlov will lecture about scientific advances in nanotechnology in the context of energy generation and clean energy to thousands of scientists at Sigma Xi chapter events worldwide at universities, government laboratories, and industry research centers.

For 78 consecutive years, Sigma Xi selected its panel of Distinguished Lecturers as an opportunity for chapters to hosts visits from outstanding individuals who are at the leading edge of science in a variety of fields. Dr. Orlov is recognized worldwide for his expertise in the development of novel materials for energy generation, structural application and environmental protection. The Distinguished Lecturers are available to chapters from July 1, 2016 to June 30, 2017.

Some of Dr. Orlov's lecture titles include: How nanotechnology can save us and the environment: Making it happen in a safe way; Exploiting unhappy nanoparticles to produce energy and clean up the environment; and How nanoparticles are used in consumer products: Should we be concerned?

At Stony Brook, Dr. Orlov is also a faculty member of the Consortium for Interdisciplinary Environmental Research, the Institute for Advanced Computational

Science, the Advanced Energy Center, and the Department of Chemistry. He is also a Visiting Professor at Cambridge University in the United Kingdom.

Previously, Dr. Orlov was selected to the Fellowship of the UK Royal Society of Chemistry, the U.S. National Academy of Engineering (NAE) Frontiers of Engineering, and the NAE Frontiers of Engineering Education. He was also named a Kavli Fellow in 2014 by the Kavli Foundation and the U.S. National Academy of Sciences.

Photographed center, above, at the High Pressure Laboratory at Stony Brook University, Orlov and fellow researchers were the recipients of an \$800,000 Materials Genome Initiative (MGI) award from the National Science Foundation (NSF) in 2013 for their project, "High-Pressure Synthesis of Novel Oxynitride Photocatalysts Directed by Theory and In Situ Scattering," that integrates theory, synthesis and property measurements with the aim of unlocking the potential of high pressure as a routine tool for solid state materials discovery.

About Dr. Orlov's Stony Brook University Materials Lab: Our group is doing highly interdisciplinary research at the interfaces of chemistry, materials science and chemical/environmental engineering. We are developing novel nanoscale and nanostructured materials, which can potentially revolutionize energy production and substantially reduce environmental pollution.

DR. DAVID FERGUSON: THE ROLE OF THE UNIVERSITY IN THE INNOVATION ECOSYSTEM, AND IMPLICATIONS FOR SCIENCE CITIES AND SCIENCE PARKS: A HUMAN RESOURCE DEVELOPMENT APPROACH

Reads: Dr. David Ferguson, Chair of the Department of Technology and Society and Distinguished Service Professor of Technology and Society and Applied Mathematics and Statistics at Stony Brook University along with Ramon Emilio Fernandez, Ph.D. Candidate in Technology, Policy and Innovation, published their paper, "The Role of the University in the Innovation Ecosystem, and Implications for Science Cities and Science Parks: A Human Resource Development Approach," in World Technopolis Review 2015.

The paper explores the current and potential talent development and talent engagement dimensions of

universities in economic development, and research and practice in education and policy—with implications of such dimensions for science cities/science parks. The paper highlights the importance of a greater role for universities, in collaborating with business/industry and governments, in examining new economics-sensitive and values-sensitive models for education and human resource development so as to better understand and support innovation in global contexts.

World Technopolis Review is a multidisciplinary peer-reviewed journal that is aimed at laying the foundation for the sustainable development of Science, Technology, and Research Parks.

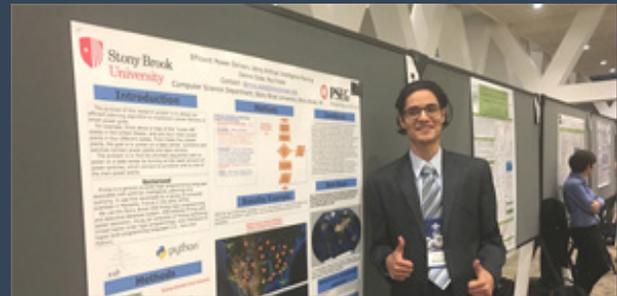
STUDENT FOCUS

COLLEGE OF BUSINESS TECHNOLOGY INNOVATION MBAS CONSULT TWELVE STARTUPS



Twelve technology startups in September challenged 60 College of Business Tech Innovation MBAs with business plan issues. The MBA teams of five students each delivered reports to the startups. Rich Gilbride of FSA raved about the study of mobile ordering on 64 campuses. Brimes' Ram Maramara was enthusiastic about the analysis of four potential markets for the Jelly Fish wave electric generator. Bonded Energy's Jerritt Gluck appreciated the refinement of his business plan for turning NYC apartment buildings with steam radiators into smart systems with wireless sensors. Other successful projects included analysis of the following technology markets: wireless electricity for alum Alberto De Leon, biomass to diesel fuel processing for BNL nanotech also for BNL, green concrete for Sulcrete's Bill Biamonte, and balancing aided shoe for Medical Engineering students. Remaining projects included marketing a new heat exchanger for Paul Schwartz of Thermolift, learning to learn training material for blogger David Myer, a new technology for polluted land for Bluestem, and a grant proposal for new water filter for Plinio Guzman.

CEWIT FACULTY DR. PAUL FODOR MENTORS IN THE 2015 PSEG EXPLORATIONS IN STEM SUMMER RESEARCH PROGRAM



December 2015 Researcher of the Month Dennis Sosa, Computer Engineering major, Class of 2017, participated in the 2015 PSEG Explorations in STEM summer research program administered through Technology & Society, the Career Center and URECA, a program that provides summer support for undergraduate research in STEM fields, particularly to students with demonstrated financial need. Working under the mentorship of Dr. Paul Fodor of the Computer Science Department, CEWIT, Dennis researched "Efficient Power Delivery Using Artificial Intelligence Planning": designing an efficient planning algorithm to implement power delivery in smart power grids, using Prolog, a general purpose logic programming language, and the XSB Prolog logic programming and deductive database system. Read the full interview.

AN EXPLAINER: HOW GRID MODERNIZATION COULD IMPROVE YOUR LIFE

THIS NEW VIDEO FROM THE U.S. DEPARTMENT OF ENERGY BREAKS IT DOWN

For the month of January, the U.S. Department of Energy (DOE) is making a series of announcements to support its Grid Modernization Initiative. The electric power grid has been rightly celebrated as the single most important engineering feat of the 20th century. The grid powers our homes, offices, hospitals, and schools; and, increasingly, it powers our favorite devices from smartphones to HDTVs. With those and other modern innovations and challenges, our grid will need to evolve.

Grid modernization efforts will help the grid make full use of today's advanced technologies and serve our needs in the 21st century. While the vast majority of upgrades are implemented by private sector energy companies that own and operate the grid, DOE has been investing in technologies that are revolutionizing the way we generate, store and transmit power.

THE STONY BROOK UNIVERSITY ADVANTAGE

The Smart Grid Innovation Center (SGIC) is planned for a 20,000sf expansion of the Advanced Energy Research and Technology Center (AEC), the second, following CEWIT, New York State designated Center of Excellence at Stony Brook University's Research & Development Park.

SGIC's mission is to drive the development and commercialization of future generations of Smart Grid technologies, making Long Island and New York a



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global center for the new tools that will manage the electric power grid of the 21st century.

The Center will capitalize on the laboratories of AEC as well as the powerful assets of adjacent CEWIT for modeling and simulation, big data, cybersecurity, visual computing, and networking. The SGIC will also call upon Stony Brook University NYSTAR programs including the SensorCAT and the new Center for Advanced Technology in Integrated Electric Energy Systems (CIEES), designated to enhance the development and integration of advanced technologies into electrical systems to accelerate the progress of renewable energy.

More on the University's energy innovations and research at the Advanced Energy Conference (AEC2016), April 21 & 22, 2016, NYC.



10TH ANNUAL MACHINE LEARNING SYMPOSIUM MARCH 4, 2016 · NYC

PRESENTED BY:



UPCOMING EVENTS:

February 2, 2016 · Institute for Advanced Computational Science 2016 Seminar Series

February 3, 2016 · Long Island Business Development Council Presents Howard Zemsky, CEO, Empire State Development

February 11 & 12, 2016 · Stony Brook University Computer Science/Information Tech & Engineering Career Fair

February 15, 2016 · Stony Brook University Innovation Center Pitch Contest

February 19, 2016 · Stony Brook University DoIT Assessment Symposium · Data Visualization: Presenting Data Effectively

March 4, 2016 · New York Academy of Sciences Machine Learning Symposium

April 21, 2016 · Long Island Business Expo

April 25-29, 2016 · Hannover Messe 2016

April 21 & 22, 2016 · Advanced Energy Conference (AEC2016)

OUR COMMUNITY:

The Advanced Energy Center

The Center for Advanced Technology in Diagnostic Tools and Sensor Systems (Sensor CAT)

The Center for Biotechnology

The Center for Corporate Education and Training at Stony Brook University

The Center for Dynamic Data Analytics (CDDA)

The College of Business at Stony Brook University

The College of Engineering and Applied Sciences at Stony Brook University

Empire State Development: NYSTAR

IEEE Long Island Section

Long Island Forum for Technology (LIFT)

Long Island High Technology Incubator

Long Island Software and Technology Network (LISTnet)

The New York Academy of Sciences

Small Business Development Center at Stony Brook University

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