NEWSLETTER
APRIL 2016

CEWIT is an unparalleled resource, advancing the science and technology underlying the next epoch of the information revolution.
APRIL COVERAGE: Bright Ideas Call for Incubator Company Showcase and Inventors Chapter · CEWIT Crowdsensing, Sonification Research · Leading Perspectives on Energy Initiatives

Recognizing the bright ideas behind our community of entrepreneurs, inventors and researchers this spring. At the Center of Excellence in Wireless and Information Technology and across the Stony Brook University campus, innovative technological breakthroughs are ubiquitous. From a new chapter of inventors to a 70 company community of startups, we have it covered.

A Look At: The CEWIT member inventors part of the 30 inaugural scientific pioneers inducted into the University's new National Academy of Inventors Chapter; the upcoming Incubator Company Showcase highlighting the technical and entrepreneurial advances of our campus' burgeoning community of member companies; leading perspectives in energy initiatives from the Advanced Energy 2016 Conference; emerging CEWIT research in mobile crowdsensing and data sonification; a CEWIT Video Wall Jamboree, new team member and other events and opportunities on the radar.

Be a Part of Our Trajectory: Still time to submit technical contributions on innovative, cutting-edge solutions and research findings in the areas of the Internet of Things, Cybersecurity, Big Data Analytics and Visualization, Health Technologies and Medical Devices, Smart Energy, Smart Urban Systems and Information Technology and Society, to the 13th International Conference & Expo on Emerging Technologies for a Smarter World (CEWIT2016). For more conference information, the full Call for Papers, Submission Guidelines, and Submission Portal visit, www.cewit.org/conference2016.
The 13th International Conference & Expo on Emerging Technologies for a Smarter World

November 2 & 3, 2016  |  Melville Marriott Long Island  |  Melville, NY, USA

Gaining recognition as one of the leading IT conferences, CEWIT2016 is the premier international forum on the development and application of emerging technologies in infrastructure, healthcare and energy — three of the most critical components of a smarter global environment.

With more than 175 participating organizations and 500 attendees, CEWIT2016 is a destination for disseminating cutting-edge ideas in information technology and for driving the local, regional and global innovation economies.

Contribute to the leading IT research shaping the solutions of tomorrow.

Call for Papers Now Open Through May 1, 2016.
Areas include: The Internet of Things, Cybersecurity, Health Technologies and Medical Devices, Big Data Analytics and Visualization, Smart Urban Systems, Smart Energy, IT and Society.

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For more information:

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NEW TO THE CEWIT TEAM
DR. FAN YE JOINS AS DIRECTOR OF THE COMMUNICATION AND DEVICES DIVISION, BRIDGING FACULTY AND BUSINESS COMMUNITIES, CENTRAL TO CEWIT’S MISSION

Fan Ye received his Ph.D. from the Computer Science Department of UCLA in 2004 and then joined IBM T. J. Watson Research Center as a Research Staff Member. Currently he is an Assistant Professor in the Department of Electrical Engineering at Stony Brook University. His research interests include mobile sensing platforms, systems and applications, Internet-of-Things, indoor location sensing, wireless and sensor networks. He has published over 60 peer reviewed papers that have received over 7000 citations according to Google Scholar. He has 21 granted/pending US and international patents/applications. He was the co-chair for the Mobile Computing Professional Interests Community at IBM Watson for two years. He received IBM Research Division Award, 5 Invention Achievement Plateau awards, Best Paper Award for International Conference on Parallel Computing 2008. He has served as panelist multiple times for NSF and Hong Kong Government Research Councils, on program and organizing committees for conferences including ACM Mobicom, ACM Sensys and IEEE Infocom.
Research in Focus: Fast, Scalable and Accurate Indoor Floor Plan Construction via Mobile Crowdsensing

The lack of floor plans is a critical reason behind the current sporadic availability of indoor localization service. Service providers have to go through effort-intensive and time-consuming business negotiations with building operators, or hire dedicated personnel to gather such data. We leverage crowdsensed data from mobile users to construct complete and accurate floor plans automatically. It extracts the position, size and orientation information of individual landmark objects from images taken by users. It also obtains the spatial relation between adjacent landmark objects from inertial sensor data, then computes the coordinates and orientations of these objects on an initial floor plan. By combining user mobility traces and locations where images are taken, it produces complete floor plans with hallway connectivity, room sizes and shapes.

Our experiments on large shopping malls show that the 90-percentile errors of positions and orientations of landmark objects are about 1 ~ 2m and 5 ~ 9 degrees, while the hallway connectivity is 100% correct. Currently we are developing new techniques so as to reduce the data amount, thus time needed to collect data for floor maps. One single user is able to finish data collection in about 10 minutes for one floor of large offices, labs or malls. We are deploying the system for mapping buildings on Stony Brook Campus.

Joining the CEWIT this month, Dr. Ye brings a scope of expertise in wireless and sensor networks as well as valuable ties with industry partners to propel advances in the field. He furthermore holds a joint appointment as Assistant Professor in the Department of Electrical Engineering at Stony Brook University. For more information on Dr. Ye’s research and publications, visit his website.

CEWIT enjoys a number of positive connections, discussions and impressive content at last week’s Advanced Energy Conference 2016 (AEC2016) at the Jacob Javits Convention Center in New York City, April 20-22, 2016. Organized by the Advanced Energy Center, our New York State Center of Excellence colleagues at Stony Brook University, the Conference offered the energy industry the most comprehensive platform for researchers, regulators, policy makers, energy providers and business leaders to converge and address the issues facing the future of energy in New York, the U.S. and around the world. A look at our takeaway:

What We Learned on Economic Development for Clean Tech Innovators:
In session with STARTUP NY’s Vice President Leslie Whatley and Dr. John Blaho, Director of Industrial-Academic Research and Innovation Hot Spots at the City University of New York, we learned that startup growth in New York is happening in dialog with both society and with universities. Startup companies, on one front, are big player in the urban renewal of many areas throughout state, creating hubs of innovation and urban centers that attract the workforce and feed the economic development of communities.

Another is the vertical integration of startups with New York State’s universities. As the universities work to fine-tuning the educational priorities needed to serve these emerging industrial needs, they are simultaneously
helping incubator companies on their campuses to perfect the science behind their technologies and the resources needed to bring such innovations to the marketplace. Companies are well positioned to receive the benefits of the entire University network, a key factor in the suite of New York State incentives, including Innovation Hot Spot and STARTUP NY, aimed at economic prosperity.

What We Learned on Energy Cybersecurity:
Panelists from Consolidated Edison, AVANGRID, Assured Information Security, and New York Independent System Operator together discussed one of the major issues in securing the grid, *the need for visibility of the combined cyber and physical assets to ensure full fledged protection from attacks*. Currently, only 30% of major utility organization have harmonized their IT and physical assets as part of their security regime. As the Internet of Things plays a large role in the utility industry, it has become more than apparent for organizations to prioritize protecting their combined IT and physical assets, as well as the enormous amount of customer data also at risk. We also learned from the panel that there is in fact a calculated balance between moving forward with innovative technology and protecting assets.

What We Learned on the Show Floor: Jasmine Universe's Product Launch:
Jasmine Universe, the Stony Brook University-resident energy use startup developing technology to maximize efficiency in home and work environments, made its official debut at the Conference, and ideal launch pad for its product announcement. We learned that the company is now well equipped, and deserving, to become a serious contender in the marketplace, after incubating and perfecting its technology overall several years.

Jasmine Universe was one of a number of Long Island-based startups taking advantage of the Conference's megawatt guest list, including Brimes Energy, Energystics Ltd., Bonded Energy Solutions and ThermoLift, all members of Stony Brook University’s Clean Energy Business Incubator Program.

Though Jasmine Universe did present its official product launch at the event, the company is already negotiating with various potential distribution partners, including PSEG, while exploring state-by-state energy-efficiency qualifications and developing other relationships with other potential partners, all pointed toward a larger rollout later this year.

“We are a serious player in this marketplace,” said Founder and Chief Executive Officer, Mohan Wanchoo. “And we’re open for business.” The full story at Innovate LI.
Thirty Stony Brook faculty members — all of whom hold patents issued by the U.S. Patent and Trademark Office — were inducted as inaugural members to the SBU-NAI. Their inventions cross into many scientific fields, such as chemistry, biomedical engineering, computer science, pharmacological science and mechanical engineering.

“Over the last two decades, Stony Brook has accounted for 90 percent of all the revenues coming to SUNY from licensing and patents. That’s something we should be very proud of.”

Guest speaker Karen J.L. Burg, NAI Board of Directors, addressed the new Stony Brook inductees, and Distinguished Professor of Chemistry and Director of the Center for Advanced Technology in Integrated Electric Energy Systems, Dr. Benjamin Hsiao, gave the keynote speech.
Distinguished Professor of Chemistry Iwao Ojima, NAI fellow and Stony Brook Chapter President, and Director of Technology Licensing and Industry Relations Peter Donnelly, Executive Director of the Stony Brook Chapter, discussed the importance of having an NAI chapter on campus to help build the research enterprise leading to marketable inventions.

“The Stony Brook University chapter of the National Academy of Inventors is very crucial for this University,” commented Professor Ojima. “It will bolster the importance of our scientist-inventors and also cultivate next-generation scientists who have new inventions in mind.”

“In terms of moving forward with commercialization, the faculty play a critical role there,” added Donnelly. “They are the world’s leading experts in their fields and in their inventions, and typically a company will want that expertise on hand as they move forward with product development and investment.”

The SBU-NAI will foster research that leads to academic inventions and entrepreneurship from faculty and students. The chapter will also help build a culture of invention across all campus disciplines and, as Professor Ojima stated, cultivate the next generation of academic inventors.

There are more than 200 university and research institution NAI chapters in the U.S. and around the world. The NAI-SBU chapter is open to all members of the University community who have received an issued patent from the USPTO.

CEWIT Inventor Profiles:
Dr. Arie Kaufman: Chief Scientist, The Center of Excellence in Wireless and Information Technology (CEWIT); Distinguished Professor and Chairman, Department of Computer Science

Dr. Kaufman has conducted research for over 40 years in visualization, graphics, virtual reality, user interfaces, multimedia, and their applications, especially in biomedicine. His significant research breakthroughs and cutting-edge inventions include 3D Virtual Colonoscopy, Cube Hardware Architectures, CEWIT’s Reality Deck, and Real-Time Simulation and Visualization of Flow.

Dr. Serge Luryi: Director, Center for Advanced Technology in Diagnostic Tools and Sensor Systems; Distinguished Professor and Chairman, Department of Electrical Engineering
Dr. Luryi has published over 250 papers and has been awarded 53 US patents in the areas of high-speed electronic and photonic devices, material science, sensor systems and electronic packaging. He has been recognized by Bell Laboratories as a Distinguished Member of Technical Staff and elected Fellow of the American Physical Society and Fellow of the Optical Society of America for his theory of electron transport, invention of novel electron devices and pioneering contributions to semiconductor optoelectronics.

Dr. Steven Skiena, Distinguished Teaching Professor, The Center of Excellence in Wireless and Information Technology (CEWIT) and Department of Computer Science; Founder and Chief Science Officer, General Sentiment
Dr. Skiena’s research interests include the design of graph, string, and geometric algorithms, and their applications, particularly to biology. He is the author of five books, including “The Algorithm Design Manual” and “Calculated Bets: Computers, Gambling, and Mathematical Modeling to Win” and is co-founder and Chief Science Officer of General Sentiment, a media measurement company based on his Lydia text/sentiment analysis system. Dr. Skiena’s Data Science Laboratory at CEWIT studies large-scale text analytics and sentiment analysis.

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HEARING THE BIG PICTURE: EXPERIENCING DATA WITH SOUND
CEWIT RESEARCH IN FOCUS: DR. MARGARET SCHEDEL EXPLAINS WHY SCIENTISTS AT BROOKHAVEN NATIONAL LAB MAY SOON BE LISTENING TO NANOMATERIALS

When it comes to analyzing scientific data, there are the old standbys, plots and graphs. But what if instead of poring over visuals, scientists could listen to their data—and make new discoveries with their ears? That’s one of the goals driving the emerging field of sonification, the process of transforming data into sound.

Composer and cellist, Associate Professor of Music, Director of the Consortium for Digital Arts, Culture, and Technology and CEWIT Faculty Member at Stony Brook University, Dr. Margaret Schedel
joins Science Friday, a weekly radio show about science and technology that airs on 400 public radio stations across the country, to explain why scientists at Brookhaven National Lab may soon be listening to nano materials.

Through her work, Dr. Schedel explores a relatively new field — data sonification — generating new ways to interact with information through the use of sound. Her work explores how we can expand our understanding of complex scientific information by using our sense of hearing.

“As we enter this era of big data, people are trying to figure out different ways to experience their data,” said Schedel. “Sonification is becoming a new buzzword.”

Schedel began sonifying data with her husband, Dr. Kevin Yager, a scientist at the Center for Functional Nano-materials at Brookhaven National Lab. Yager’s research focuses on the use of scattering methods to measure nanostructures. Schedel had seen some of the images from his X-ray scattering work, so she asked him to explain the math behind it.

As part of his research, Yager uses Fast Fourier Transform (FFT), an algorithm already well known to Schedel from its application in audio. She uses FFT because it enables her to split the pitch portion of the sound from the timing information.

Once Schedel realized that their fields had FFT in common, she began to connect the dots. She convinced Yager that she could enhance his research by giving him the opportunity to hear the vast amount of data from the beamline instead of just seeing the images. Schedel essentially attached pitch to a location and volume to brightness, and then played a sound from an image.

Now Schedel is using the knowledge she gained to help a diverse range of departments across Stony Brook University experience their own data through sound. She is exploring the possibility of sonifying patients' health records for the Department of Biomedical Informatics and is working with the Department of Physical Therapy to sonify the movements of patients with Parkinson’s Disease. She is also involved in bringing sound to the Center of Excellence in Wireless and Information Technology’s Reality Deck and Next Generation Video Wall System.

Schedel has furthermore worked with CEWIT to establish the joint cDACT/CEWIT STEAM (Science, Technology, Engineering, Arts, Math) residency here at CEWIT, a catalyst for new research and a basis for collaboration between two of Stony Brook University’s dynamic and forward-looking associations.

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INTERDISCIPLINARY OUTLOOK: CEWIT VIDEO WALL JAMBOREE
A SPECIAL VIEWING OF EXPERIMENTAL MOVING IMAGE ARTWORKS ON CEWIT'S NEXT GENERATION VIDEO WALL SYSTEM, IN COLLABORATION WITH THE DEPARTMENT OF ART.
On Wednesday May 4, 2016, from 2:30pm-5:30pm, CEWIT and the Department of Art at Stony Brook University host a special viewing of video-based artworks produced by Department of Art students from two spring semester courses, Graduate Electronic Media and Experimental Video.

Led by Professor Stephanie Dinkins, the CEWIT and Department of Art Video Wall Jamboree will present 30 short experimental moving image art projects on CEWIT’s Next Generation Video Wall System, a thirty-two megapixel multimedia display array with 5.1 surround sound system; an extension of CEWIT’s multimedia lab and a powerful tool for visualizing R&D development and activity.

The artworks will consist of moving images constructed and deconstructed using digital technologies, such as Max Jitter, Processing, After Effects, and Final Cut Pro X.

As part of a constructive, forward-looking partnership, CEWIT, the Department of Art, and the Consortium for Digital Arts, Culture and Technology (cDACT) together drive a series of interdisciplinary special projects, R&D initiatives, and experiences at the intersection of the arts, innovation, and technology.

Viewings such as this one will provide a space for active and sustained dialog among Stony Brook University-based researchers, artists, technologists, and entrepreneurs and will lay the groundwork for future collaborations.

CEWIT, the University’s New York State Center of Excellence in Wireless and Information Technology is a leading example of multidisciplinary research and industry/academic partnerships propelling innovation at the cutting-edge of technology. The Department of Art offers undergraduate and graduate programs in studio art and art history with an emphasis on modern and contemporary art. We believe that art must be taught with a critical consciousness of the broad intellectual and social issues of our time, combining interdisciplinary approaches to further awareness of the arts, media and technology.

The May 4, 2016 program will open with an hour long session of student projects, 2:30pm-3:30pm, and will close with a light reception and open discussion, 3:30pm-5:00pm, on project critique, student feedback, and the importance of exploring the vanguard issues that arise at the intersection of computation and the arts.

For more information contact Professor Stephanie Dinkins, Stephanie.dinkins@stonybrook.edu.

WE GO FAR BEYOND

STONY BROOK UNIVERSITY’S NEW YORK STATE CENTERS OF EXCELLENCE AND CENTERS FOR ADVANCED TECHNOLOGY ANCHOR THE UNIVERSITY’S RESEARCH AND ECONOMIC DEVELOPMENT ASSETS IN ITS FAR BEYOND ETHOS

Support our Centers, learn how to partner with us, collaborate on projects, and be a part of our trajectory.

Contact our Business Development Manager and Entrepreneur in Residence, Dr. Lawrence Weber, 631-632-1368, lawrence.weber@stonybrook.edu. Meet us and our incubator community on June 2, 2016 at the Stony Brook University Incubator Company Showcase.

By the Numbers:
3 NYSTAR Designated Centers for Advanced Technology in Biotechnology, Sensor Systems, and Electric Energy Systems
2 NYSTAR Designated Centers of Excellence in Advanced Energy and Wireless and Information Technology
4 Diverse, State-Certified Incubators
150 Specialized Research Facilities
450 Industry Partners
1 Billion Dollars in financing and revenues
19,000 jobs created/retained
3,500 projects completed
ON THE RADAR

INDUSTRY ADVANTAGE: CEWIT TEAMS WITH INDUSTRY PARTNERS, ZEBRA TECHNOLOGIES AND ECOFUSION, TO OFFER HEALTHCARE TECHNOLOGY AND BIOMEDICAL APPLICATION INTERNSHIPS

EcoFusion is looking for a Biomedical Applications Development Intern to develop applications for a digital medicine company, offering a mobile-device-driven system to bring about lifestyle changes in populations suffering from, or at high risk of developing, chronic diseases such as obesity, diabetes, cardiovascular (CVD), and cognitive function diseases. Apply and/or Share.

Zebra Technologies is looking for Healthcare Technology and Management Interns that are motivated, organized, and detail oriented. Preferably with a background in SW or HW engineering and healthcare who will assist in documenting patient point of care workflows within the hospital environment, with a focus on characterizing technology interoperability and efficiency gaps. Apply and/or Share.

NVIDIA AND THE INSTITUTE FOR ADVANCED COMPUTATIONAL SCIENCE (IACS) ORGANIZE 2-DAY OPENACC & GPU HANDS-ON WORKSHOP

Why You Should Attend the May 24 & 25, 2016 Workshop: NVIDIA GPUs are the world’s fastest and most efficient accelerators delivering world record scientific application performance. NVIDIA GPUs are the most pervasive parallel computing model, used by over 150,000 developers worldwide. This Programming Workshop will focus on introducing scientific computing programming utilizing NVIDIA GPUs to accelerate applications across a diverse set of domains. Presented by NVIDIA instructor Bob Crovella, the workshop will introduce programming techniques using OpenACC and will include topics such as optimization and profiling methods for GPU programming. More Information and to Register.

FUNDAMENTALS OF EARLY STAGE FINANCING: TAKING YOU THROUGH THE FIRST COUPLE OF ROUNDS

May 3, 2016: On the panel is Stony Brook University's Incubator Advocate, Dan Polner, joining a roundtable exploration and discussion intended to de-mystify the fundraising process and offer companies sound advice from the front lines of the startup community. Hosted by Nixon Peabody at Hofstra University's IdeaHUB, the panel will hit on all the key points, including the capital raising “game plan,” finding investors, making sense of convertible debt AND equity and balancing control and financial needs. More Information and to Register.

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Join leading researchers, innovators, and entrepreneurs converging to share ideas, build partnerships, and bring cutting-edge technologies to the marketplace.

Get the 2016 Sponsorship Advantage: Contact Kathleen Ferrell at kathleen.ferrell@stonybrook.edu or +1 631-216-7114.

WWW.CEWIT.ORG/CONFERENCE2016/CFP
UPCOMING EVENTS:

May 2, 2016 • Small Business Development Center: How to Write a Business Plan

May 3, 2016 • Fundamentals of Early Stage Financing: Taking You Through the First Couple of Rounds

May 4, 2016 • CEWIT and The Department of Art Video Wall Jamboree

May 24 - 25, 2016 • NVIDIA and The Institute for Advanced Computational Science (IACS): 2-Day OpenACC & GPU Hands-on Workshop

May 4, 2016 • LISTnet Best: Long Island Tech Showcase

May 17, 2016 • Long Island Manufacturing Innovation Conference

June 2, 2016 • Stony Brook University Incubator Showcase

July 5 - 8, 2016 • 10th International Web Rule Symposium (RuleML) 2016 at Stony Brook University

November 2 & 3, 2016 • CEWIT2016 Conference

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 Clean Energy Business Incubator Program (CEBIP)
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

Stony Brook University

NOVEMBER 2 & 3
MELVILLE, NY

CEWIT 2016