



Center of Excellence

WIRELESS AND INFORMATION TECHNOLOGY

AT STONY BROOK UNIVERSITY

NEWSLETTER

OCTOBER 2016

Tech Entrepreneurship Symposium, Going Global, Engineering-Driven Research, Socially Innovative Solutions, CEWIT 2017 Programs, Open Data and Hacks

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

OCTOBER COVERAGE: TECH ENTREPRENEURSHIP, GOING GLOBAL, ENGINEERING-DRIVEN RESEARCH, SOCIALLY INNOVATIVE SOLUTIONS, 2017 PROGRAMS, OPEN DATA & HACKS

Ask the Experts: Access leading business management strategies at work in Long Island's innovation economy at the upcoming Technology Entrepreneurship Symposium on November 2, 2016.

CEWIT Business Insights: CEWIT hosts Startup Global Long Island, an expert panel series designed to educate entrepreneurs about expanding their businesses globally, featuring CEWIT team members, leading industry partners, and Stony Brook University entrepreneurs.

Technology Frontiers: CEWIT and Stony Brook University researchers are at the forefront of engineering-driven research, landing noteworthy awards from the National Science Foundation. Research on smart, connected hospitals merges disciplines to bring patient-centric and data-driven results to the future of healthcare, as strides in cloud load balancing will improve the design of load balancers in today's cloud computing platforms.

CEWIT Industry Partners: The latest technology by CEWIT industry partner, Intelligent Product Solutions Software, Digital Fly, is a perfect, socially innovative IT solution to help prevent cyberbullying.

CEWIT 2017 Programs: Introducing CEWITHacks, a National Engineers Week Kickoff Celebration and Hackathon focusing on IoT and microservices. **On Hacks & Open Data:** Whether business-oriented, scientific, or creative, interpretations and manipulations of open data are a catalyst for the creation of new tools across industries and government uses.



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The Next Big Thing:
CEWIHacks

CONTENTS:

- 3 Technology Entrepreneurship Symposium
- 3 - 4 CEWIT Business Insights: Going Global
CEWIT, Industry Partners, and Trade
Specialists Share Insights, Strategies, and
Resources for Entrepreneurs in the Global
Marketplace
- 5 - 6 Technology Frontiers: Engineering-Driven Research
Safe and Secure Network Control for Smart
and Connected Hospitals
Scalable, Heterogeneity-Aware Load Balancing
- 6 - 7 Socially Innovative IT Solutions
Meet Digital Fly: The Social Media Aware,
Cyberbullying Security Solution
- 7 CEWIT 2017 Programs
CEWIT National Engineers Week Kickoff
Celebration & Hackathon: CEWITHacks
CEWIT2017 Conference
- 8 On Open Data & Hacks
Open Data As A Game: Creating New Tools
Across Industries and Government Uses
Algorave: Live Coding Application Across Art
and Science, A Hacker Philosophy
- 9 Upcoming Events, Our Community

TECHNOLOGY ENTREPRENEURSHIP SYMPOSIUM

Presented by the Office of the Vice President for Economic Development

ASK THE EXPERTS:

Access leading business management strategies at work in Long Island's innovation economy in CEWIT's applied research and education-oriented environment.

A wide range of practical how-to information and strategies for forming, conducting, and selling your enterprise and a technology-agnostic crossroads of proven experts, inventors, and entrepreneurs representing companies at all stages – together at Stony Brook University.

WEDNESDAY, NOVEMBER 2, 2016 · 9:30am

CEWIT, Room 200, Stony Brook University | Limited Seating, Registration Required



Our Experts: Alon Kapen, Partner, Farrell Fritz, is a corporate attorney who focuses on representing entrepreneurs, emerging growth companies, and their individual and institutional investors. He counsels entrepreneurs and emerging growth companies in the formation of business entities, structuring agreements among founders, negotiation of capital raising transactions, compliance with securities laws, and development of effective corporate governance.

Agenda, Speaker Profiles, and Registration | www.cewit.org/events/techentrepreneurship.html



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GOING GLOBAL

CEWIT, INDUSTRY PARTNERS, AND TRADE SPECIALISTS SHARE STRATEGIES, KEY RESOURCES FOR ENTREPRENEURS IN THE GLOBAL MARKETPLACE

CEWIT hosts Startup Global Long Island, an expert panel series designed to educate entrepreneurs about expanding their business globally and the most pressing issues startups face in the global marketplace.

Supported by the U.S. Commercial Service, U.S. Small Business Administration, Stony Brook University, Empire State Development and the Global Innovation Forum, Startup Global included several CEWIT

industry partners and Executive Director, Dr. Satya Sharma, along with a full program of trade specialists and business experts focusing on insights, strategies and most specifically, resources, for going global.

Insights: Keynote speaker Jim Hayward of Stony Brook University-based and CEWIT industry partner, Applied DNA Sciences, on How Startups Compete in the Global Market, emphasized that a **key competitive advantage is to bring real world value to an international industry and to the consumer alike.** On the first sales of his unique biotech-based security solutions overseas, success tactics included addressing marketing strategies and goals accordingly, cutting costs by using consultants and sales channels increase breadth, and utilizing those that have the domain knowledge and are equally passionate about your given product or solution.

Strategy: Russ Artzt, CA Technologies Co-Founder, CEWIT Industrial Advisory Board Chairman, and CEO of CEWIT-based software startup, Digital Associates, on the panel, The Path to Going Global: Market Outlook and Success Stories, **credits CA Technologies' international success at an early stage to the development of products that were innately global in nature.**

Furthermore, following a set of standards that would be applicable globally, incorporating international distributors into the CA workforce, and building relationships that embodied CA's culture, trust, and extensive product knowledge are all attributing factors to the company's global strategy and ultimately, success story.

A strategic approach to sustaining this success, Russ later implemented an Innovation Center at CEWIT's next generation research and education facility. **By accessing CEWIT resources and the brainpower of 70+ Stony Brook University students, CA has continued to advance product innovation, and propel growth and global impact.**

Panelists further emphasized catering to distribution channels and consumers equally as well as prioritizing on being proactive in the global sphere, whether it is anticipated or not, there is only benefit in building a global initiative into company structure from the start.

Resources: CEWIT Executive Director, Dr. Satya Sharma has an extensive career history as Senior Vice President at Symbol Technologies, running the company's 90+ country, worldwide operation of which held 54% of the world market share in the wireless sector. **His advise: create an approach that favors the differentiation and segmentation of international markets, not just a singular global strategy.**

As the moderator, Dr. Sharma led a closing panel, Resources for Your Startup to 'Go Global' and How to Craft an International Business, outlining the most imperative content of the Start Global event, resources. From the panelists, top resources for regional entrepreneurs include Global NY and Empire State Development Corporation, U.S. Commercial Service Long Island, Small Business Development Center at Stony Brook University, U.S. Small Business Administration, and Export-Import Bank of the United States.



Bottom Line: The market is hungry for U.S. products having a built-in, worldwide reputation for quality and authenticity. Statistics show that companies that export do better economically by diversifying risk while increasing sales. Entrepreneurs must prioritize on doing their homework, protecting their IP, and advantaging their resources.

There is absolutely a lot of information out there, and on each of these topics, but be mindful, **it is free, available, and supported by a number of innovative organizations regionally, statewide, and internationally.**

As the startup sector is the fastest growing, collaborating with these organizations, in addition to directly benefitting companies and entrepreneurs, will help to keep them relevant in this space, a significant ancillary benefit.

To add to the queue, Senior Adviser for Innovation and Competitiveness, Joshua Mandell, notes that the U.S. Department of Commerce has over **40,000 data sets and access to API's to support international market research and the creation of better business models in the global arena.** Its Digital Attache Program addresses trade barriers and its **27 new global market reports across industry sectors are ingrained with vital information to support entrepreneurs in their export strategies.**

The Take Home: The Startup Global hosts, U. S. Commercial Service Long Island, have all of the major connections and can provide unparalleled consultation services for regional companies, a game changer in the global sphere.

Check out the range of their resources and programs at 2016.export.gov/newyork/longisland, or start the conversation, contact Susan Sadocha, Director at 516-427-9117, Susan.Sadocha@trade.gov; Molly Ho, International Trade Specialist, 516-493-8150, Molly.Ho@trade.gov.

SAFE AND SECURE NETWORK CONTROL FOR SMART AND CONNECTED HOSPITALS

ENHANCING MAXIMUM CARE QUALITY AND ENABLING BIG DATA ANALYSIS FOR MEDICAL APPLICATION

Shan Lin, an assistant professor in the Department of Electrical and Computer Engineering at Stony Brook University, has received a National Science Foundation (NSF) Faculty Early Career Development (CAREER) award, one of the most prestigious honors given to support junior faculty who exemplify the role of teacher-scholars through research education.

Lin will receive \$450k during the next five years for his research — **Safe and Secure Network Control for Smart and Connected Hospitals** — which seeks to improve safety and security of networks in a hospital setting.

According to Lin, hospitals will benefit from the ability to collect critical data on a patient's psychological state and the caregiver's workflow using a new medical device and sensor network. **This improvement in resources is expected to collect precise and complete data on patients for accurate documentation and maximum care quality, and enable big data analysis for medical application.** Through this CAREER research, Lin will study and propose new medical applications and networking solutions, as well as design and deploy an open source medical device and sensor network.

Through his teaching efforts at Stony Brook, Lin will create graduate and undergraduate courses on mobile cloud computing and smart systems that will allow students to be involved in this groundbreaking research. If Lin's research is as effective as intended, these improved medical technologies will likely be implemented in hospitals and medical facilities worldwide.

"I am really excited for and proud of Professor Lin and the entire college as this is our fourth CAREER award for this year," said Fotis Sotiropoulos, dean of the College of Engineering and Applied Sciences (CEAS). "What better testament to the excellence of our junior faculty. Shan Lin's work is at the frontier of engineering-driven medicine, a strategic thrust for CEAS. His work will help shape the hospitals of the future through the convergence of sensors, big data and analytics with health care delivery."

Previous to his NSF CAREER award, Lin received five NSF grants, including Heterogeneous Large-Scale Telemedicine for Cardiology Patients, Multiple-level Predictive Control of Mobile Cyber Physical Systems with Correlated Context, and Non-isotropic Networked Sensor Deployment for Smart Buildings.

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SCALABLE, HETEROGENEITY-AWARE LOAD BALANCING

IMPROVING THE DESIGN OF LOAD BALANCERS AND SCHEDULERS IN TODAY'S INHERENTLY HETEROGENEOUS CLOUD COMPUTING PLATFORMS

Anshul Gandhi, an assistant professor in the Department of Computer Science in the College of Engineering and Applied Sciences, has been awarded a Computer Systems Research (CSR) award by the National Science Foundation (NSF). He will receive nearly \$400,000 during the next three years for his research project,



“Scalable, Heterogeneity-Aware Load Balancing.” The funding will allow Gandhi and his team of students to conduct research on cloud load balancers and their performance.

“I would say the ultimate goal is to improve the design of load balancers and schedulers in today’s inherently heterogeneous cloud computing platforms,” said Gandhi, who is also an affiliate professor in the Department of Applied Mathematics and Statistics, an affiliate of the Smart Energy Technology Cluster, and leads the Performance Analysis of Computer Systems (PACE) Lab. Load balancers distribute incoming requests in cloud based services, which are typically online rented services from companies such as Google, Amazon and Microsoft.

However, there is variability between rented services, even if two identical services are purchased. This leads to an impact in performance because the load balancers will still treat these services as identical even though they are not. Differences arise due to different generations of a particular device or machine, or because of different resource utilization levels of the underlying physical servers.

If the load balancers are able to identify the differences between cloud computing resources or services, they can provide better performance by adjusting the load distribution accordingly. This points to the need for load balancers for heterogeneous resources, which is the focus of Professor Gandhi’s research.

CSR funded-projects are notable because of the significant progress expected in a short period of time. NSF’s CSR program “supports transformative scientific and engineering research leading to the development of the next generation of highly performant, heterogeneous, power-efficient, environmentally sustainable, and secure computer systems,” according to the NSF.

Since joining Stony Brook in 2014, Gandhi has been awarded an IBM Faculty Award, a Google Faculty Research Award and a Microsoft Azure Research Award.

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SOCIALLY INNOVATIVE IT SOLUTIONS: MEET DIGITAL FLY

THE SOCIAL MEDIA AWARE, CYBERBULLYING SECURITY SOLUTION KEEPING SCHOOLS AND STUDENTS SAFE

The latest technology by CEWIT industry partner, Intelligent Product Solutions Software, Digital Fly, is a perfect solution to help prevent cyberbullying and making the community a safer place.

In today’s world, students and adults alike are immersed in technology with cell phones, tablets, and social media. Digital Fly harnesses this technology with its Fly Paper Engine to monitor threats in real-

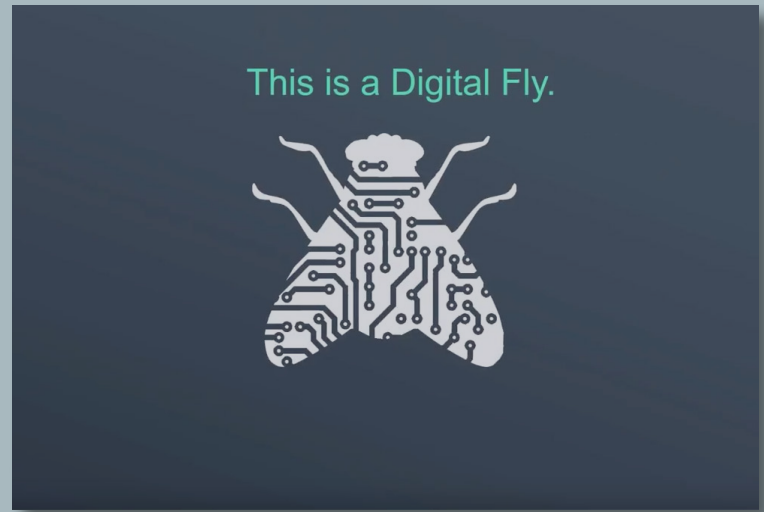
help prevent the next incident before it happens. Digital Fly monitors social media and alerts school district officials about potential threats to students, staff members and property.

Using geolocation, Digital Fly monitors social media within a 10-mile radius of a school campus, using keywords selected by the school district. For example, search terms could include: guns, drugs, kill, etc.

The Digital Fly service also offers a "tip line" so that students or parents can report tips anonymously.

School administrators have real-time access to social media tracking with Digital Fly via a web-based portal, and the service also sends email alerts to notify them of any potential threats. The school administrators can then evaluate the information and determine the best course of action, helping to quickly respond to and prevent any incidents. Additionally, the software allows administrators to search back over a month of data to identify trends.

"Digital Fly is the first product designed from the ground up for schools, to help them monitor social media as a way to identify potential threats early on and prevent the next incident from happening," said Derek Peterson, Founder and Chief Technology Officer. "It is an important tool not just to stop crime, but also as a tool for administrators to better understand what is going on in their school — bullying, and other problems. With knowledge comes power — so that they can identify and proactively deal with any escalating issues." Sal Iannuzzi, CEO of Digital Fly adds, "Our greatest asset is our children, and Digital Fly helps protect students from potential threats."



"We eliminate the burdensome and time-consuming task for school personnel to monitor social media. We monitor the technologies students' use, so administrators can focus on keeping their schools safe."

CEWIT continues to look forward to working with Digital Fly and Peterson, an avid CEWIT Advisory Team member, to advance socially innovative, IT solutions. **More on Digital Fly at www.digitalfly.net.**

IPS • OCT 2016

SAVE THE DATES: CEWIT 2017 PROGRAMS

CEWIT NATIONAL ENGINEER'S WEEK KICKOFF CELEBRATION & HACKATHON: CEWITHACKS, IOT & MICROSERVICES

February 17-19, 2017, CEWIT: In celebration of the 2017 National Engineers Week and George Washington's birthday, the nation's first engineer, CEWIT hosts its kickoff celebration and hackathon: **CEWITHacks on February 17-19, 2017, focusing on industry-relevant, IoT challenges for a smarter, more insightful global world.**

As strengthening the technology and engineering workforce pipeline is an integral component of CEWIT's three-fold mission, **CEWITHacks will bridge university brainpower with regional industry priorities, investigating innovative, next-generation solutions while advancing tech literacy and fostering new enterprise development.**

A Major League Hacking event co-hosted by Softheon, CEWITHacks is designed in conjunction with CEWIT's core industry partners, sponsors, and member entrepreneurs to select scenarios that will have a direct, real-world application to their product portfolios.

A lab-to-marketplace approach that is largely representative of CEWIT and one that provides a valuable educational resource for our students and regional business community.

Interested in supporting CEWITHacks and contributing to the program? Want to pre-register? Contact the CEWITHacks Team at hacks@cewit.org. For more information, visit: www.cewit.org/events/cewithacks.

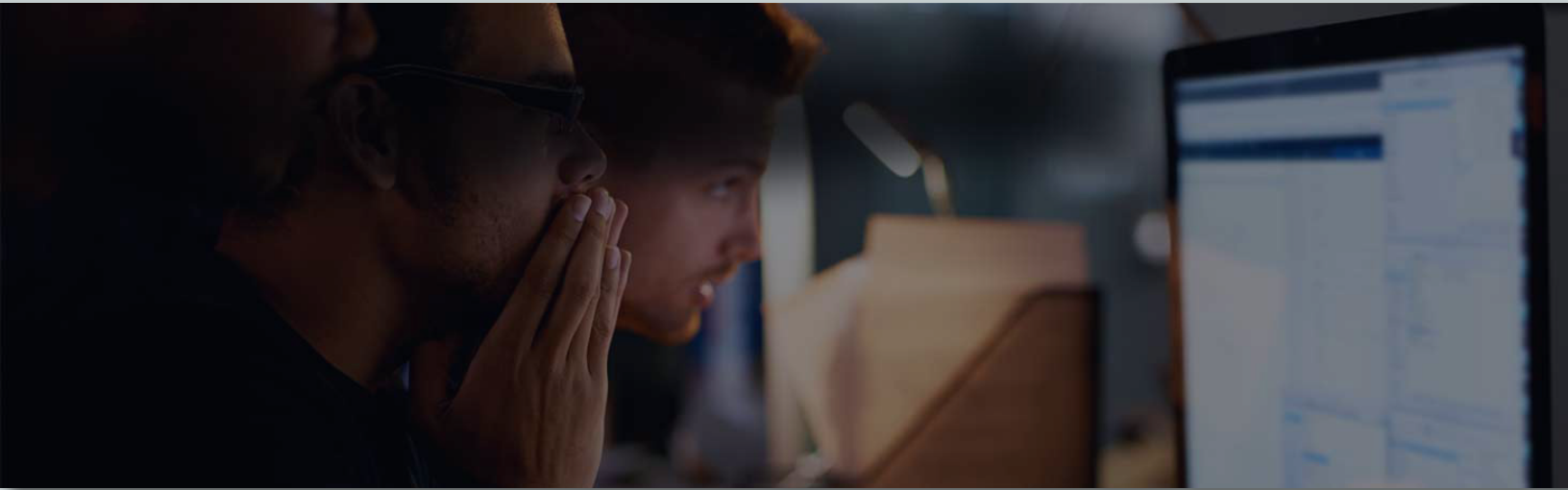
CEWIT2017 CONFERENCE

November 7 & 8, 2017, Melville Marriott Long Island: The 13th International Conference & Expo on Emerging Technologies for a Smarter World (CEWIT2017) is scheduled for November 7 & 8, 2017. Held at the Melville Marriott Long Island, CEWIT2017 will continue its tradition of providing the premier international forum for presentations of original research results of emerging technologies in infrastructure, healthcare, and energy.

With more than 175 participating organizations and over 500 attendees, **the CEWIT2017 is a destination for innovators to exchange ideas, build valuable partnerships and bring cutting-edge technology to the marketplace.** Details: www.cewit.org/conference2017.

ON OPEN DATA & HACKS:

OPEN DATA AS A GAME: A CATALYST FOR THE CREATION OF NEW TOOLS ACROSS INDUSTRIES AND GOVERNMENT USES



Around the world something interesting is happening: Governments, and even a few private companies, are opening up huge stores of data they've been collecting over decades. This shift is one towards harnessing the power of the masses, instead of relying on what an entity can achieve itself. For the first time, anyone with a computer and the Internet can access some of what their government produces and do something fantastic with it. There are two basic ways of making use of that data: make tools that offer up insight, or represent the data in some way which allows people to derive their own insights.

The importance of this human element in open-data sharing is very much emblematic of a larger truth: **Despite fantastic advances in technology, data will never speak for itself. Data comes alive when citizens can access it and interact with it.**

Why make a game out of open data? People like games, but don't really understand data. If you can map the data to a game, people can learn about it without having to pour over reams of spreadsheets and XML documents. Making a game out of open data allows you take something useful, but inherently dull, and give it a fun skin. Essentially, making a game about open data is just a new way of visualizing the data.

Putting data into the hands of the people and allowing for their creative interpretations **fuels the understanding of the data itself and creates more intelligent data consumers while helping to cultivate data-backed ideas and innovative insights.**

OPENSOURCE.COM, GOVTECH · OCT 2016

ALGORAVE: AN INTRODUCTION TO LIVE CODING APPLICATION ACROSS ART AND SCIENCE, A HACKER PHILOSOPHY

An algorave, or algorithmic rave, is an event where people dance to music generated from algorithms, often using live coding techniques. Algoraves can include a range of styles, including a complex form of minimal techno, and has been described as a meeting point of hacker philosophy, geek culture, and clubbing. Algorave defines its music as "sounds wholly or partly characterized by the emission of a succession of repetitive conditionals," to generate a unique audiovisual theater experience.

ICYMI: Artist, programmer, and a computer scientist, Andrew Sorensen, joins Stony Brook University's 50th Anniversary Celebration of Experiments in Art and Technology for an algorave performance at the Institute for Advanced Computational Science. Andrew is as likely to be found hacking code in nightclubs as steering scientific codes on distributed high performance computing clusters. Andrew is well known for creating the programming languages that he uses in live performance to generate audiovisual theater. He is regularly invited to perform these contemporary improvisations all around the world. Andrew is also a well known speaker, with regular appearances at technology, science and arts conferences around the globe. Andrew is the author of the Extempore language, a systems programming language designed for high-performance "live" programming.

UPCOMING EVENTS:

November 2, 2016 · Technology Entrepreneurship Symposium

November 2 & 3, 2016 · Life Sciences Summit

November 4, 2016 · TEDxSBU 2016: Heads and Tales

November 9, 2016 · Stony Brook University Innovation Center WolfieTank 2016

November 9, 2016 · LaunchPad Long Island Secret Knock Session

November 10, 2016 · SBDC: Alternative Lending Resources for Small Businesses

November 10, 2016 · IACS: An Overview of High Performance Computing and Challenges for the Future

February 17-19, 2017 · CEWIT Engineers Week Kickoff Celebration & Hackathon: CEWITHacks

June 8, 2017 · Stony Brook University 2017 Incubator Company Showcase

November 7 & 8, 2017 · CEWIT2017 Conference & Expo on Emerging Technologies for a Smarter World

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



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