Artificial Intelligence
Machine Learning
Data Analytics
Personalized Medicine

CEWIT2018 CONFERENCE

OCTOBER 16, 2018

CONFERENCE GUIDE

Center of Excellence
WIRELESS AND INFORMATION TECHNOLOGY
AT STONY BROOK UNIVERSITY

WELCOME

This is the 13th International Conference and Expo on Emerging Technologies organized by the Center of Excellence in Wireless and Information Technology (CEWIT) at Stony Brook University. The Conference has gained international recognition as one of the premier conferences on the development and application of emerging technologies and for bringing together academic research and industrial innovation at a single forum. Our major sponsors of this year's conference include CA Technologies, Softheon, Zebra Technologies, Henry Schein, SVAM International, Northrop Grumman Corporation, JDA Software, Verint Systems, Nixon Peabody, Panasonic, and Carter, DeLuca, Farrell & Schmidt, LLP.

IT will continue to create new and highly profitable businesses that we have not even imagined. Machine Learning, IoT, Data Analytics, Smart Systems, Computational Chemistry and Biology, Edge Computing and other emerging technologies will span new industries. Machine Learning and AI applications will enhance the economy and computers will learn the way things work in the world. Computers will learn to perceive contexts and ability to learn like humans. The security, connectivity, privacy and standardization in the IoT world will be addressed to allow the extraction of insights from data. Internal data streams will be combined with data streams coming from the external world such as social media and industry for data scientists to build new algorithms to make quick and intelligent decisions. The digital divide will be reduced, and cognitive learning will become part of smart systems and communities. It is critical for those who are engaged in IT research to build strategic alliances and business partnerships among the academic, scientific, and business communities. Working with other organizations, technology commercialization activities can be formulated to help drive economic growth worldwide by quickly moving technologies from research labs to the marketplace.

Addressing this trend, the conference this year hosts a wide range of high-caliber speakers, including leading researchers, technologists, venture capitalists, executives and policy makers, and a broad international audience to discuss innovation in Health Technologies and Medical Devices, Smart Manufacturing, Cybersecurity, Internet of Things, Smart Urban Systems, Visual and Decision Informatics, and Technology Entrepreneurship.

Through this conference, we aim to disseminate research findings and innovative solutions to major technical challenges in developing a smarter global environment. The conference program includes many leading research and industry experts with more than 80 oral and poster presentations, and well as a 20-company delegation from Israel. It also provides networking opportunities for individuals engaged in research, development, and the commercialization of technologies.

My heartiest congratulations to all authors and welcome to all participants.

Executive Director
The Center of Excellence in Wireless and Information Technology (CEWIT)

Center of Excellence
WIRELESS AND INFORMATION TECHNOLOGY
AT STONY BROOK UNIVERSITY

Stony Brook University

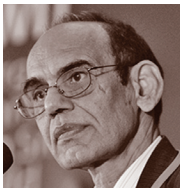
The Center of Excellence in Wireless and Information Technology (CEWIT) at Stony Brook University

1500 Stony Brook Rd
Stony Brook, NY 11794-6040
(631) 216-7000

cewit.org

CEWIT LEADERSHIP

Dr. Yacov Shamash
Vice President
for Economic
Development
Stony Brook University



Dr. Satya Sharma
Executive Director

Dr. Arie Kaufman
Chief Scientist

Dr. Shmuel Einav
Director
Medical Technologies
Division
Chairman, CEWIT 2018
Conference

Dr. Sangjin Hong
Director
Globalization

Dr. Lawrence Weber
Business Development
Manager

Dr. Fan Ye
Director
Communications and
Devices Division

Mr. Bin Zhang
Associate Director
Computing Services

Dr. Rong Zhao
Director
Software Systems
Division

SPECIAL THANKS TO OUR SPONSORS

PLATINUM

ca technologies

Softheon

ZEBRA

SILVER

HENRY SCHEIN®

jda. Plan to deliver™

SUPPORTER

HOFFMANN & BARON, LL
INTELLECTUAL PROPERTY ATTORNEY

Intelibs

Manufacturing and Technology
Resource Consortium (MTRC)
AT STONY BROOK UNIVERSITY

CEWIT ADVISORY BOARD

Mr. Russell Artzt
Vice Chairman
and Founder
CA Technologies
Founder and Chief
Executive Officer
Digital Associates
Executive Chairman
at RingLead, Inc.

Dr. Michael A. Bernstein
Professor of Business,
Economics, and History
& Provost and Senior
Vice-President for
Academic Affairs
Stony Brook University

Mr. Otto Berkes
Chief Technology
Officer
CA Technologies

Kamal Bherwani
Executive Chairman
Magine TV

Mr. Rick Boivie
Senior Technical Staff
Member
IBM

Mr. Steve Cento
Sector Engineering
Fellow. Northrop
Grumman Corpora-
tion Aerospace Systems
(NGAS) Sector
Research, Technology,
and Engineering (RT&E)
Manned Aircraft
Design (MAD) Center
of Excellence (CoE)
Systems Engineering
(SE) Homeroom

Dr. Jennifer L. Costley
Director, Physical
Sciences, Sustainability &
Engineering
The New York Academy
of Sciences

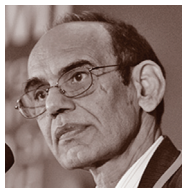
Mr. James A. Harding Jr.
Chief Executive Officer
Henry Schein One

Mr. Masaaki Maeda
Strategic Advisor
Asurion, LLC

Mr. Christopher Pendergast
Senior Vice President and
Chief Technology Officer
Henry Schein, Inc.

Mr. Bob Sanders
Senior Vice President,
Data Capture Solutions
and Engineering
Shared Services
Zebra Technologies

Dr. Yacov Shamash
Vice President
for Economic
Development
Stony Brook University



Dr. Satya Sharma
Executive Director
Center of Excellence in
Wireless & Information
Technology (CEWIT)
Stony Brook University

Dr. Kevin Tracey
President
Feinstein Institute for
Medical Research

Mr. Girish Rishi
Chief Executive Officer
JDA

CONFERENCE AGENDA

TIME	SPEAKER	TALK TITLE
7:15am	**Registration Open • Continental Breakfast**	
8:15am - 8:30am	Opening Remarks	
8:30am -8:55am	Ian Beaver, PhD	Human-in-the-Loop: Why Let Statistics Have All the Fun
8:55am - 9:20am	Guruduth Banavar, PhD	High-Resolution Microbiome Modeling for Individualized Diet Recommendations
9:20am - 9:45am	Aidong Zhang, PhD	Patient Similarity Learning for Personalized Medicine
9:45am - 10:10am	Steven Greenspan, PhD	The Challenge of AI and Machine Learning
10:10am -10:35am	Shimei Pan, PhD	Large Scale Social Media-based Analysis of Human Behavior and Decision-making
10:35am – 10:50am	**BREAK**	
10:50am - 11:15am	Desikan Madhavanur	Impact of AI and ML on Executing the Digital Supply Chain
11:15am - 11:40am	Tomoaki Nakatani, PhD	Connected Industries and Data Science
11:40am - 12:05pm	Craig Granowitz, MD, PhD	Innovation in Clinical Trials to Meet Increased Patient, Provider and Payer Demands for Safe, Effective and Cost-Effective Personalized Therapies
12:05am - 12:30pm	Richard Rzeszutek, PhD	Solving Computer Vision and Machine Learning Problems for Real-Time Shelf Visibility
12:30pm - 1:30pm	**LUNCH**	
1:30pm - 1:55pm	Eugene Sayan	Social Determinants of What?
1:55pm - 2:20pm	Biye Li	From Keyboards to Neural Networks
2:20pm - 2:45pm	Adam Dicker, MD, PhD, FASTRO	Prostate Cancer: Use Case Examples Incorporating Genetic Testing, Molecular Diagnostics, and Patient Reported Outcomes and Patient Generated Wearable Data from Early Diagnosis to Advanced Disease.
2:45pm - 3:10pm	Takayuki Inagawa	Corporate Venture Investment in Technologies
3:10pm - 3:25pm	**BREAK**	
3:25pm - 3:50pm	Mike Andrews, PhD	Cracks in the Facade of Artificial Intelligence
3:50pm - 4:15pm	Shu Tao, PhD	Ubiquitous Knowledge Sharing with Mobile-Based Augmented Reality
4:15pm - 4:40pm	Kerstin Kleese van Dam	How Department of Energy's High Performance Computing, Machine learning and AI Research Impacts State of the Art Precision Medicine
4:40pm - 5:15pm	Dantong Yu, PhD	Deep Learning at the Edge: Real-Time Intelligence on Embedded Systems
5:15pm - 7:00pm	**NETWORKING RECEPTION**	**Join us in the CEWIT Lobby for a Networking Reception with Beer, Long Island Wine, Soda and Great Food**

SPEAKERS

Michael Andrews, PhD
Head of Data Science
Wade & Wendy Inc.

Cracks in the Facade of Artificial Intelligence

ABSTRACT

At Wade & Wendy Inc., an A.I.-powered human resources company, we routinely run up against limits in how intelligent we can make our recruiting chatbot. On the other hand, don't many of us expect general artificial intelligence, even "Kurzweil's singularity" promising infinite intelligence, to be just around the corner? In this talk I'd like to explore that vast chasm between expectations and reality, starting with some details of how we've recently developed our own A.I. products at Wade & Wendy, then touching on some of the concepts and theoretical underpinnings that set the stage for understanding what may or may not actually be possible in the future. A question to start thinking about now before we meet is: how conscious, intelligent, experienced, wise, or agile, would you like your next taxi driver to be?

BIO

Dr. Andrews has been dabbling in Artificial Intelligence since a kid in the late 70's, and to this day hasn't ceased being critically involved with modelling, prediction, and algorithms in general, across a wide variety of endeavors. That includes earning a PhD degree in experimental physics from MIT, working as a scientist at Bell Labs, as a quant trader on Wall Street, as a data scientist in digital advertising and marketing, leading to where he is currently residing at Wade & Wendy Inc., an A.I.-powered human resources company. Please see MichaelRaskinAndrews.com for additional information.

Guru Banavar, PhD
Chief Technology Officer
Viome, Inc.

High-Resolution Microbiome Modeling for Individualized Diet Recommendations

ABSTRACT

Viome is a "wellness as a service" company that uses AI systems to understand the biological ecosystem inside us, and improve our wellness through a personalized diet and lifestyle plan. Viome applies statistical AI (machine learning) and symbolic AI (knowledge representation & reasoning) to create a high-resolution model of individual microbiomes, then uses concepts from modern medical science to recommend personalized nutrition and lifestyle regimes.

BIO

Dr. Guruduth Banavar is driven to develop and apply deep technology innovations to solve major problems, especially in health and education. He is known for his work on IBM Watson AI, Smarter Cities, Services Innovation, Mobile Computing, and Distributed Systems. Guru is currently building the AI engine at Viome, Inc, a company that uses uses advanced microbiology & biochemistry to understand your molecular functions, applies AI & ML technologies to create a high-resolution model of your individual biology, and uses concepts from modern medical science to recommend food and supplements personalized for you. Until April 2017, he was a global Vice President at IBM-leading Watson AI research, and a member of CEO Ginni Rometty's top executive team. Banavar has built a range of advanced technologies and delivered solutions in multiple industries throughout his career. He has published extensively, and holds more than 25 US patents. Banavar is a recognized thought leader who has spoken on the Nobel, Aspen, and Milken stages, and most recently, delivered the 2017 Turing Lecture. His awards include the Leadership in Technology Management Award from PICMET in 2017, and a National Innovation Award from the President of India in 2009. He has served on NY Governor Cuomo's commission for state resiliency, and was an elected member of the IBM Academy of Technology. His work has been featured in major international media including the New York Times, Economist, Wall Street Journal, BBC, and NPR.

Ian Beaver, PhD
Lead Research Engineer
Verint Intelligent Self-Service,
Verint Systems, Inc.

Human-in-the-Loop: Why Let Statistics Have All the Fun

ABSTRACT

With the rise of Machine Learning and its application to Big Data, the role of the human in data analysis has become blurred. When it comes to the analysis of conversations however, the words of statistician George E. P. Box ring true: "All models are wrong, but some are useful". In this talk, Verint Lead Research Engineer Ian Beaver covers the drawbacks to both human-centric and machine-centric analysis and how the happy medium is found in leveraging the strengths of both. This presentation provides real-world examples of ways that humans and machines can complement each other to complete complex tasks. Although computers are taking over many tasks in data analysis, the human abilities of abstract reasoning and logic are still a valuable resource.

BIO

Ian Beaver, PhD is the Lead Research Engineer at Verint Intelligent Self-Service, a division of Verint Systems, Inc. Ian has been publishing discoveries in the field of AI since 2005 on topics surrounding human-computer interactions such as gesture recognition, user preference learning, and communication with multi-modal automated assistants. Ian has presented his work at various academic and industry conferences and authored numerous patents within the field of human language technology. His extensive experience and access to large volumes of real-world, human-machine conversation data for his research has made him a leading voice in natural language understanding and dialog systems. Ian is currently focused on dialog systems and means to detect and resolve misunderstandings between humans and machines. He is also leading a team in finding ways to optimize human productivity by way of automation and augmentation, using symbiotic relationships with machines. Ian received his PhD in Computer Science from the University of New Mexico. He also holds a BS and MS in Computer Science from Eastern Washington University.

Adam Dicker, MD, PhD, FASTRO
Enterprise Senior Vice President,
Professor and Chair of Enterprise Radiation Oncology,
Sidney Kimmel Cancer Center,
Sidney Kimmel Medical College
Thomas Jefferson University

Prostate cancer: Use case examples incorporating genetic testing, molecular diagnostics, and patient reported outcomes and patient generated wearable data from early diagnosis to advanced disease.

ABSTRACT

Three Takeaways:

- To understand the use of molecular diagnosis for genetic counseling and therapeutic decision making for prostate cancer.
- To assess how the combination of patient reported outcomes and wearables can assist symptom attenuation, and improved resource utilization
- To describe how we are educating the future generation of health care providers (undergraduate, graduate and post-graduate) in digital health and informatics to be empowered to improve patient's lives.

Prostate cancer (PCA) is the second most commonly diagnosed cancer among men globally, with more than 1.1 million new cases each year. In the United States, 233,000 men are expected to be diagnosed in 2014, and an American man's lifetime risk of prostate cancer is 1 in 6. With the introduction of genomic diagnostics and novel therapeutics, the past 5 years have seen an explosion in the amount of new data and opportunities for clinical benefit to prostate cancer patients. This presentation will discuss how; 1) We incorporate molecular profiling to provide guidance re: therapeutics options, 2) genetic evaluation continuum for inherited PCA and 3) the use of patient reported outcomes (PROs) combined with wearables to identify patients who are experiencing symptoms related to therapy and mitigate potential serious toxicity.

The presentation is arranged in a logical progression from screening and prevention to diagnosis, treatment and surveillance. There are advances in molecular pathology using cancer genomics that have now entered the clinical realm and research that helped in part for one of these genomic signatures to receive FDA and CMS approval. Novel molecular and genotype profiling is used in treating prostate cancer, including morphometric and systems pathology and current uses of radiographic imaging for diagnosis and staging. Precision medicine is catapulting the need for genetic testing to inform cancer treatment, particularly in the advanced-stage setting.

The Philadelphia Prostate Cancer Consensus 2017 was the first attempt to garner expert opinion consensus on key areas in the genetic evaluation continuum for inherited PCA. Increasing scientific insights into the genetic predisposition to inherited PCA, growing multigene testing capabilities, and limited guidelines necessitated expert consensus to address genetic counseling and genetic testing, PCA screening, and management.

PCA treatment needs genetic counseling and focused development. The genetic counseling model should include shared decision making between provider and patient regarding genetic testing. The discussion should clarify patient values and preferences related to screening, risk assessment, and treatment choice. Counseling elements of genetic education; discussion of benefits, risks, and limitations of genetic testing for patients and families; financial implications; and genetic discrimination laws are also important to discuss. Optimal delivery of pretest genetic counseling to patients in the multigene testing era, particularly for genetic testing for advanced/metastatic cancers for targetable mutations, is an area under development. The decision process for treatment recommendation and the quality of life components is critical for any therapeutic option.

In the last portion of the talk outlines patient-reported outcomes (PROs) that can also be used to manage toxicity in of cancer treatment, helping patients to stay on treatment longer. In addition, PROs are of interest to the FDA to demonstrate safety. Accurate, inexpensive, commercially available wearable sensors open up new possibilities for monitoring patients' vital signs, physical activity, and sleep. Taken together, these parameters can be used to gauge toxicity and can serve as a proxy for overall quality of life. It is expected that remote activity monitoring will increasingly be used in the context of clinical trials and standard care to improve toxicity management and be used for survivorship and wellness post cancer treatment.

BIO

Dr. Dicker's work has resulted in establishment of parameters for quality assurance in radiation oncology, robotic technologies for brachytherapy, novel therapeutic clinical trials utilizing targeted therapies and ionizing radiation, innovative preclinical models to evaluate radiation modifiers including immunotherapy and FDA/CMS approval of a genomic classifier for management of prostate cancer.

Dr. Dicker leads the advisory committee for the ASTRO-AAPM patient safety organization, RO-ILS (radiation oncology incident learning system). He also chairs the ASCO-ASTRO joint measure development technical expert panel. This panel will develop a set of radiation oncology measures for use in the QOPI Qualified Clinical Data Registry and MIPS. His group created the Apple ResearchKit app for patient reported outcomes (PROs) for prostate cancer patients. Dr. Dicker's research, supported by the Prostate Cancer Foundation, is focused on radiation-immunotherapy approaches integrated with digital health technologies to improve the lives of patients.

Dr. Dicker is Chair Emeritus, Integration Panel for the Prostate Cancer Research Program-Department of Defense, Vice-Chair, Translational Science and Digital Health committees for NRG Oncology (www.nrgoncology.org), and Radiation Oncology Co-Chair, NCI Genitourinary Cancers Prostate Cancer Task Force. He is a member of the National Cancer Institute Investigational Drug Steering Committee, and National Clinical Trial Network Core Correlative Sciences Committee. Dr. Dicker has authored and co-authored over 320 papers in professional journals, 4 textbooks and numerous book chapters. He was elected a Fellow of the American Society of Radiation Oncology in 2014.

Dr. Dicker received his BA from Columbia College, and his MD and PhD (Molecular Pharmacology) from Cornell University Medical College. He received his postgraduate training at Memorial Sloan-Kettering Cancer Center after a surgical internship.

SPEAKERS

Craig Granowitz, MD, PhD
SVP, Chief Medical Officer,
Amarin

Innovation in Clinical Trials to Meet Increased Patient, Provider and Payer Demands for Safe, Effective and Cost-Effective Personalized Therapies

ABSTRACT

Despite significant advances in medical treatments to reduce risk of major cardiovascular events such as cardiac death, nonfatal myocardial infarction, embolic stroke, unstable angina and the need for revascularization procedures, the number of Americans experiencing cardiovascular complications and death are on the rise. Improved treatment modalities are being offset by an aging population, higher rates of obesity and diabetes, poor medical education and poor adherence to ever more complex treatment regimens.

The number and speed of new treatments development has slowed and there have been a number of late-stage development failures and set-backs, the most notable being the CETP class of agents, designed to increase the levels of HDL (good) cholesterol. The therapies that have been recently approved by health authorities are either considered very expensive (i.e. PCSK9 class of antibodies to lower LDL cholesterol) or have limited improvements in efficacy or both. As a consequence, the patient benefits of these treatments and adoption rates have been disappointing and resultant investment returns to shareholders, have not met expectations.

Change is needed in the manner in which innovation is defined, the speed and cost of identifying at-risk populations and the individualization of therapeutic intervention.

The use of "Real-World Evidence" (RWE) from large deidentified patient electronic medical records can help quantify at-risk populations and support determination of interventional study hypotheses and potential benefits. This can accelerate the development of novel agents, reduce the cost of these programs and support the cost-effectiveness of the resultant studies.

Similarly, RWE analyses can help better target therapies to populations most at need and most likely to benefit from the therapeutic intervention. This is particularly important as the complexity and cost of care in these patients continues to increase and is not on a sustainable path.

These observations will be highlighting using the "at risk" patient group with well-controlled LDL levels while on statin treatment, with high triglycerides, and other cardiovascular risk factors. Use of RWE and randomized, blinded placebo-controlled clinical studies together provide powerful research tools to determine the value, magnitude and benefits of the experimental treatment.

BIO

Dr. Granowitz joined Amarin in January 2016 with extensive experience managing a multi-national medical affairs organization for a portfolio of leading cardiovascular products. Prior to joining Amarin, Dr. Granowitz was senior vice president and head of global medical affairs, global human health at Merck, where he developed and implemented an entirely new global medical affairs organization following Merck's merger with Schering-Plough. In this capacity, among his numerous achievements, he provided critical medical affairs support in the run-up to and read-out of Merck's cardiovascular outcomes study, IMPROVE-IT. From 2003 to 2008, he was group vice president, head of global medical affairs for Schering-Plough.

Steven Greenspan, PhD
Vice President and
Research Scientist
CA Technologies

The Challenge of AI and Machine Learning

ABSTRACT

Today, industry and government are being transformed by ML and Big Data Analytics. This has created new challenges for privacy and data science ethics, and has led to new privacy policies and laws such the General Data Protection Regulations enacted in the EU. Although de-identified databases are standard practice in protecting privacy, ML and big data analytic techniques have been used to re-identify large numbers of individuals in very large databases. In light of these failures, differential privacy and other paradigms have emerged as new privacy defenses. This talk will cover some of the research that we are conducting in differential privacy, privacy by design, and AI-ethics.

BIO

Dr. Greenspan is Vice President and Research Scientist at the Strategic Research Labs of CA Technologies where he manages a team of IT research scientists and applied research engineers. His research portfolio covers user experience and emerging technologies. He is currently researching collaborative visualization, differential privacy, IoT trustworthiness, and AI ethics. Steve was formerly a Distinguished Member of the Technical Staff at AT&T Bell Laboratories, and has a PhD in Experimental (Cognitive) Psychology from SUNY Buffalo. His postdoctoral research at UC San Diego and Indiana University focused on user experience, psycholinguistics and speech perception. Steve is co-inventor of 59 USPTO-issued patents, and a member of the Industrial Advisory Board of the NSF UICRC Center for Visual and Decision Informatics.

Takayuki Inagawa
President and Chief Executive Officer
NTT DOCOMO Ventures, Inc.

Corporate Venture Capital

ABSTRACT

"Corporate Venture Capital" is booming on these days among big companies like Intel, GE, Verizon etc. In order to execute an open innovation in a big company, they would need new business collaborations with startups to expand their business in an innovative way. Beyond 2020, many Japanese companies would see business opportunities for Tokyo Olympic games because many visitors and attendees are expected to be in the city. With that situation, 5G network will be deployed in 2020 and will be utilized especially in city areas. DOCOMO is now focusing on nine strategic areas such as AR/VR, Mobility, Sharing, AI, Fintech, Healthcare, Drones, Work Innovation, and Work Matching. We think that an Artificial Intelligence is one of key areas to look at, and a combination with IoT technologies would work on innovative solutions. This presentation covers our latest business updates of our venture investments with focusing on those strategic areas, especially AI and related data analysis areas.

BIO

Mr. Inagawa has been working in the mobile communications industry for more than 20 years. He was named President and Chief Executive Officer of NTT DOCOMO Ventures in June 2018, after experiencing his EVP and COO position at NTT DOCOMO Ventures since July 2016. Before settling into current position, he was named President and Chief Executive Officer of DOCOMO Innovations (Palo Alto, CA) in April 2013. He has been responsible for leading and managing all company projects for contribution to develop innovative mobile communication services/products, in addition to his venture investment activities. Before getting into corporate venture capital industry, He worked for DOCOMO Technology, which was one of subsidiary companies of NTT DOCOMO, to be in charge of leading corporate strategy office and help its CEO's decisions. Prior to that position, he was responsible for human resource management, especially for education, training and development for selected employees at NTT DOCOMO Headquarters. He also has wide range of expertise, such as purchasing management, international business development, development of mobile network technology. With business development as the pillar of our activities, he continues to create technology and service innovations not only in Japan but worldwide, and to work together to create new businesses and contribute to increasing revenues for NTT DOCOMO and the NTT Group. Mr. Inagawa has an MBA from the University of Illinois at Urbana-Champaign and a MS in Electronic Engineering from Gunma University.

Kerstin Kleese van Dam
Director Computational Science Initiative, Brookhaven National Laboratory

How Department of Energy's High Performance Computing, Machine learning and AI Research impacts state of the art Precision Medicine

ABSTRACT

Department of Energy Laboratories (DOE) such as Brookhaven National Laboratory (BNL) on Long Island, New York are funded through the Office for Advanced Scientific Computing Research to develop leading edge technologies from novel hardware to algorithms to investigate chemical, biological and physical processes, analyze and interpret extremely large volumes of data. Over the last few years the DOE has been approached by other agencies to apply these technologies and techniques to advance state of the art in precision medicine to accelerate medical research, improve diagnosis and support better treatment strategies. This talk will provide an overview of the technologies developed at BNL and the impact that they have had in different clinical settings.

BIO

Kerstin Kleese van Dam (2018 Woman of the Year Award in Science winner Brookhaven Town, 2006 British Female Innovators and Inventors Silver Award) is the Director of the Computational Science Imitative at Brookhaven National Laboratory in the USA, leading BNL's computer science and mathematics R&D portfolio reaching from leading edge research to operational infrastructure provision.

Prior positions included Associate Division Director, lead of the Scientific Data Management group, Chief Scientist and Lead Data Services at the Pacific Northwest National Laboratory in the USA; Director of Computing at the Bio-Medical Faculty at the University College London, UK; IT Program Manager and lead Scientific Data Management Group at the Science and Technology Facilities Council in the UK, HPC specialist at the German Climate Computing Center (DKRZ) and Software Developer at INPRO, a research institute of the German Automotive Industry. Kerstin has led a range of multi-disciplinary data management and analysis efforts in scientific domains such as Molecular Science (e-Minerals), Materials (e-Materials, Materials Grid, Chemical Imaging Initiative), Climate (DOE BER Accelerated Climate Modeling for Energy (ACME), DOE BER Climate Science for a Sustainable Energy Future (CSSEF), PNNL Platform for Regional Integrated Modeling and Analysis, NERC Data Services), Biology (DOE Bio Knowledgebase Prototype Project, Integrative Biology, BBSRC Archival Services), Chemical Imaging (Analysis in Motion, REXAN, ICAT), Power Grid (PNNL Future Power Grid Initiative) and High Energy Physics (BELLE II). She has over 100 peer reviewed publications, book chapters and has edited a book on Data-Intensive Science.

Her research is focused on data management and analysis in extreme scale environments. For more details see http://www.linkedin.com/in/kerstinkleesevandam

SPEAKERS

Biye Li
Engineering Manager
Data Technologies
Automation,
Bloomberg

From Keyboards to Neural Networks

ABSTRACT

Over 30 years Bloomberg has grown from offering data on a small set of US companies to covering virtually every company in the world. This data needs to be extracted, normalized and fed to the markets as quickly and accurately as possible. In this talk we will briefly cover how the most recent breakthroughs in Neural Networks have helped us to automate document extraction, providing data with higher accuracy and faster than even the best data analysts.

BIO

Biye Li runs the Data Automation group in Bloomberg. His focus is leveraging cutting edge machine learning technologies to automate the massive data processing workload in Bloomberg. His team, which owns the largest GPU cluster within Bloomberg, has built some of the world's most accurate information retrieval engines. Biye holds Bachelor of Computer Science from Washington University.

Desikan Madhavanur
Executive Vice President
Chief Development Officer
JDA

Impact of AI and ML on Executing the Digital Supply Chain

ABSTRACT

The modern supply chain is rapidly transforming into a digital, real time, and highly connected via IOT and edge devices. As consumer centric supply chains begin to emerge, catering to segments of one, enterprises are beginning to leverage AI and ML based technologies to predict customer demand and proactively respond to these disruptions in real time. In the presentation we will cover some of the emerging supply chain trends within digital enterprises and study the advanced data science-based approaches that are being deployed to address them.

BIO

Desikan Madhavanur is JDA's Executive Vice President and Chief Development Officer, responsible for the company's product solution strategy, with a charter to invest in and develop JDA's current marketleading solutions in the areas of planning, execution and retail while harnessing the collective power of cloud, IoT, analytics and big data to bring new solutions to market that deliver real-time, actionable insights and customer value. Madhavanur joined JDA from CA Technologies, where he served as Senior Vice President and Business Center head for Data Center Orchestration. There he had P&L and growth responsibility for a business unit focused on driving modern application delivery, deployment, management, user adoption and profitable monetization. Prior to CA, Madhavanur served as GVP of Engineering, Emerging Technologies and GM of Products & Strategy at E2Open. He has also held leadership positions at JP Morgan and i2 Technologies, where he spent four years as the lead product manager for collaborative supply and demand planning solutions. He holds a bachelor's degree in engineering from Annamalai University in India, a Master's degree in systems and industrial engineering from the University of Arizona and an MBA from the University of Texas.

Tomoaki Nakatani, PhD
Professor,
School of Data Science
Yokohama City University

Connected Industries and Data Science

ABSTRACT

The Japanese government has announced "Connected Industries," a framework that aims to create new social value through the full use of technological innovation such as IoT, AI and Big Data, and to find solutions to various problems in society. Industries must play a key role in achieving this new endeavor, but training the human resources who can drive the creation of added value is also an urgent issue. Noticing this social demand, Yokohama City University (YCU) has taken the lead by establishing the first School of Data Science in the Greater Tokyo Area. YCU's School of Data Science is already implementing research and training activities with companies including All Nippon Airways Trading , Macromill and Teikoku Databank with which it has concluded comprehensive partnerships. In this presentation, I will discuss the present state of research in the field of data science in Japan; the needs of companies in terms of data science; the situation of data scientist training from a social perspective; the education and research policy of YCU's School of Data Science; and a case study of industry-university collaboration.

BIO

Dr. Nakatani is a professor of econometrics, School of Data Science, Yokohama City University, Japan. Before joining the School, he was an associate professor of agricultural economics, Research Faculty of Agriculture, Hokkaido University, Japan. He received a Ph. D. in Agricultural Economics in 2000 from Hokkaido University as well as a Ph. D. in Economic Statistics in 2010 from Stockholm School of Economics, Sweden. His area of expertise is econometrics, in particular time series econometrics. His recent research has focused on time series analysis of commodity prices and climate anomalies, both of which are collected in global scale data bases. His research interests also include quantitative analysis of agricultural policies and consumers' purchasing behavior for food/agricultural commodities. He has published several articles in Econometrics Journal, Finance Research Letters, Land Use Policy and Agricultural Water Management. He is an experienced user of the free statistical environment R and is one of the co-authors of "Stated Preference Methods using R", which has been published in the Chapman & Hall/CRC Press R Series.

Shimei Pan, PhD
Assistant Professor
Information Systems
Department
UMBC

Large Scale Social Media-based Analysis of Human Behavior and Decision-making

ABSTRACT

People currently spend a significant amount of time on social media. As a result, many aspects of our lives have been digitally captured and continuously archived on social media. Previous research has shown that information on social media is indicative of who we are (e.g., gender, education and political leaning) and is predictive of our future behavior (e.g., purchase decision). In this research, we aim at developing advanced machine learning algorithms to model the trait and behavior of individuals based on their social media activities (e.g., the messages they post, the things they like and the friends they interact with). We have applied this technique in various tasks such as predicting impulsivity, substance use, authorship, and preferences.

BIO

Dr. Shimei Pan is an Assistant Professor at the Information Systems Department of UMBC. Before joining UMBC, Dr. Pan was a research scientist at IBM Watson Research Center in New York. Her primary research interests are Text Mining, Large-Scale Social Media Analytics and Intelligent Interactive Systems. Dr. Pan has authored 80+ peer-reviewed papers in major Text Mining, Social Media Analytics, Artificial Intelligence and Intelligent Human Computer Interaction conferences and journals. She has also served on various technical program committees for major international conferences (e.g., ACL, NAACL, EMNLP, IJCAI, CIKM, RecSys and IUI). She was the program co-chair of ACM IUI 2015. She is currently the general co-chair of ACM IUI 2019. She is an associate editor of ACM Transactions on Interactive Intelligent Systems (TIIS). Dr. Pan is the recipient of the IBM faculty award and the IEEE ICTAI C.V. Ramamoorthy Best Paper Award. Dr. Pan received a Ph.D. in Computer Science from Columbia University.

Richard Rzeszutek, PhD
Technical Lead
and Researcher
Zebra Technologies
Corporation

Solving computer vision and machine learning problems for real-time shelf visibility

ABSTRACT

In this talk, we provide an exposition into Zebra's Next Generation Shelf Sensing solution. It is a solution which captures data in various customer environments, performing analysis of the captured data to provide greater visibility into retailers' shelf and store environments.

At present, retailers visually asses the shelf status by scanning the "Shelf Label" barcodes to collect relevant information regarding the product which is supposed to be on the shelf from the retailer's SKU database. This is extremely labor intensive and error prone. The data generated by the human associates is often not in a machine readable form, requiring manual processing before the problem can be resolved. This leads to delays in the identifying the out of stock or non compliance to standard store operating procedure such as ensuring the right product is placed at the right shelf location at the right price. These errors or non compliance results in lost sales and dissatisfied customers.

The Next Generation Shelf Sensing solution provides reliable data in a machine readable form, providing increased inventory visibility, improved quality of merchandise displays and higher customer satisfaction. The core technology within the Next Generation Shelf Sensing Solution is the use of computer vision and machine learning algorithms providing analysis on the data captured through various sensors. We thus provide a high level overview into the kinds of problems with a computer vision and machine learning perspective that the Next Generation Shelf Sensing Solution encounters and demonstrate how they would be solved.

BIO

Dr. Richard Rzeszutek is a technical lead and researcher at Zebra Technologies Corporation. He is part of the Engineering Product Innovation group's computer vision team within Zebra's Enterprise Mobile Computing unit. Dr. Rzeszutek received his PhD in Electrical & Computer Engineering from Ryerson University with a focus on monoscopic to stereoscopic conversion for image and video. His research interests include image processing, 3D structure recovery and computational photography.

SPEAKERS

Eugene Sayan
Chief Executive Officer
and President
Softheon

Social Determinants of What?

ABSTRACT

Despite leading the world in per capita spending on traditional health care, the United States ranks near the bottom in many health outcomes and now for the first time in generations, life expectancy in US has plateaued and is declining. This is largely due to social determinants of health: socioeconomic income and wealth inequality, social mobility, racial, geographic and behavioral factors that aren't being adequately addressed by the U.S. healthcare system. This session will focus on the use of Big Data, Machine Learning, and Artificial Intelligence to model and understand social determinants of health towards a value-based care models that seek to improve and maintain health instead of treating illness.

BIO

Eugene Sayan leads Softheon in its mission to develop innovative solutions for healthcare payers, providers, and government agencies. Prior to Softheon, he managed big data, machine learning, and robotic process automation initiatives for Fortune 1000 companies and completed a tenure at IBM. Eugene serves on several boards, including Center for Dynamic Data Analytics' (CDDA) Big Data Analytics & Visualization, the Center of Excellence in Wireless and Information Technology's (CEWIT) Healthcare IT Board, Stony Brook University, and Long Island Software & Technology Network. He received a bachelor's degree in electrical engineering & telecommunication from Istanbul Technical University and a Masters in Computer Science from the New York Institute of Technology.

Shu Tao, PhD
Manager, Department
of Cognitive Platform
for Support Services
IBM T. J. Watson
Research Center

Ubiquitous Knowledge Sharing with Mobile-Based Augmented Reality

ABSTRACT

Mobile-based augmented reality has advanced significantly in recent years. With the introduction of ARKit on iOS and ARCore on Android, more practical AR applications are coming to life. One promising application domain of AR is knowledge sharing. With digital representation of objects in the physical world (some dubbed as 'digital twins'), AR has the potential to revolutionize the way people acquiring knowledge, much like how search engine changed our knowledge acquisition habits years ago. In this talk, I will present selected R&D effort conducted by IBM Research in this area and highlight the challenges toward realizing ubiquitous knowledge sharing. I will also try to make a case that we are at the right point on the hype curve of AR to solve these challenges, in both enterprise and consumer worlds.

BIO

Dr. Shu Tao is a research staff member and manager at the IBM T. J. Watson Research Center. At IBM Research, he manages the Department of Cognitive Platform for Support Services, and is responsible for the joint research & development program with IBM Technology Support Services (TSS), an organization with $8 billion annual revenue.

Dr. Tao leads a global team and drives technology innovations into the strategy and transformation of TSS, and develops technology solutions from concept to production. His latest work focuses on developing Augmented Reality (AR) and computer vision technologies to assist field technicians, IT support-focused conversational systems to automate service delivery and question answering, Blockchain-based billing system to handle multi-party transaction, and deep analytics for predictive maintenance of IoT enabled devices.

Dr. Tao has extensive R&D experience in cloud infrastructure, computer systems and networks, machine learning and data mining. His work won the IBM Corporate Technical Recognition in 2013, five times the IBM Research Outstanding Technical Accomplishment Awards between 2011 and 2015, and four times the IBM Research Accomplishment Awards between 2007 and 2010. He has published over 40 research papers on international conferences or journals. He holds 21 US patents. He is a senior member of IEEE and ACM.

Dr. Tao received Ph.D. degree in Electrical and Systems Engineering from the University of Pennsylvania in 2005.

Dantong Yu, Ph.D.
Associate Professor in Martin Tuchman School of Management, Graduate Program Director of Ph.D. in Business Data Science, New Jersey Institute of Technology

Deep Learning at the Edge: Real-Time Intelligence on Embedded Systems

ABSTRACT

The proliferation of machine-learning is undergoing a rapid shift, with a re-thinking from traditional, naive neural networks, towards deep learning models where the neural hierarchy is more rational, optimized, and informative. Many advanced deep learning algorithms require high-end computer servers and GPUs for training model and inferring new knowledge and are beyond the capacity of edge computers and embedded system that target at real-time applications.

In this paper, we address the mismatch between deep learning and embedded systems and apply an essential concept in deep learning, i.e., transfer learning that usually tackles the training and learning phases from the ground up in an offline stage under the assumption that the holistic data distribution is well captured in the network structure, so that the future inference and output is generated rapidly in a short path/feed-forward manner dictated by the network construction. Even when a real-life application might be specific and beyond the scope of off-line training, we can still formulate it as an online learning setting; the learning overhead is still manageable considering the incremental learning cost can be distributed to each instance, while the model is already pre-trained. We will focus on transfer learning, decouple computation-/data-intensive batch processing tasks and latency-sensitive online processing, migrate complex network models into mobile platforms to create light-weight deep learning for real-time decision making at the edge where event occurrences and decision points reside. Furthermore, this novel autonomous system, i.e., Deep Learning on SoC integrates recent successes in neural networks, smart embedding systems (Nvidia Jetson SoC) and the Internet of Things (IoT) and offers a cost-effective prediction system. To meet the real-time requirement, we will propose a hardware-based solution (FPGA) for accelerating inferences and predictions and uses the prediction results to monitor, track, activate, and adjust target devices.

BIO

Dr. Dantong Yu is an Associate Professor in Martin Tuchman School of Management, and Graduate Program Director of Ph.D. in Business Data Science. He received a BS degree in computer science from Peking University and a Ph.D. degree in Computer Science from University at Buffalo. He joined Martin Tuchman School of Management at New Jersey Institute of Technology in 2016. He also holds guest appointment in the Department of Computer Science and Mathematics at BNL. He founded and led the Computer Science Group in BNL between 2009 and 2016. His research interests include data mining, machine learning, data network and storage. He has published 70 papers in leading technical journals and conferences. He has served on the review panels for NSF, DOE Early Career Investigator and DOE SBIR/STTR. He is the PC member of KDD, ICDM, ICDE, ICCCN, HiPC, and ICPADS.

Aidong Zhang, PhD
Program Director in the Information and Intelligent Systems Division of the Directorate for Computer and Information Science and Engineering National Science Foundation

Patient Similarity Learning for Personalized Medicine

ABSTRACT

Comparing and measuring similarities between patients is an important basic step for many data mining and machine learning algorithms. In this talk, I will discuss how both linear and nonlinear metric learning can be approached to capture various important relationships among patients for personalized medicine. I will show how similarity metric learning can be applied to uncertainty and ordinal data.

BIO

Dr. Aidong Zhang is a SUNY Distinguished Professor of Computer Science and Engineering at the State University of New York (SUNY) at Buffalo where she served as the Department Chair from 2009 to 2015, and has also held adjunct professor positions in both Biomedical Engineering and Biomedical Informatics Departments. She is currently on leave and serving as a Program Director in the Information & Intelligent Systems Division of the Directorate for Computer & Information Science & Engineering, at the National Science Foundation. Her research interests include data mining/data science, machine learning, bioinformatics, and health informatics. She has authored over 300 research publications in these areas. Dr. Zhang currently serves as the Editor-in-Chief of the IEEE Transactions on Computational Biology and Bioinformatics (TCBB). She served as the founding Chair of ACM Special Interest Group on Bioinformatics, Computational Biology and Biomedical Informatics during 2011-2015 and is currently the Chair of its advisory board. She is also the founding and steering chair of ACM international conference on Bioinformatics, Computational Biology and Health Informatics. She has served as editors for several other journal editorial boards, and has also chaired or served on numerous program committees of international conferences and workshops. Dr. Zhang is an ACM Fellow and an IEEE Fellow.

SPONSORS

CA TECHNOLOGIES creates software that fuels transformation for companies and enables them to seize the opportunities of the application economy. Software is at the heart of every business in every industry. From planning, to development, to management and security, CA is working with companies worldwide to change the way we live, transact, and communicate – across mobile, private and public cloud, distributed and mainframe environments.

HENRY SCHEIN, INC. is the world's largest provider of health care products and services to office-based dental, animal health, and medical practitioners. The company also serves dental laboratories, government and institutional health care clinics, and other alternate care sites. A Fortune 500® Company and a member of the S&P 500® and Nasdaq 100® Indices, Henry Schein employs more than 21,000 Team Schein Members and serves more than one million customers. Headquartered in Melville, N.Y., Henry Schein has operations or affiliates in 32 countries. The company's sales reached a record $11.6 billion in 2016 and have grown at a compound annual rate of approximately 15 percent since Henry Schein became a public company in 1995.

HOFFMANN & BARON, LLP
is Long Island's premier Intellectual Property law firm, possessing expertise in all areas of technology. Since 1984, Hoffmann & Baron has provided the umbrella of Intellectual Property protection that stimulates innovation and economic growth. We provide personalized attention and customize our services to fit the requirements of each client. Please visit us at hbiplaw.com.

INTELIBS develops and provides unique 4G,5G and WiFi wireless coverage and capacitysolutions with products and services for Dis-tributed Antenna Systems (DAS) to meet U.S.carrier and enterprise wireless needs. Intelibsspecialized to offer the Hybrid DAS solutionsfor large corporate, higher educational insti-tution campuses where they need indoor andoutdoor seamless wireless mobility. HybridDAS solution provides unified RF coveragewith multi-technology, multi-carrier platformwith scalable and flexible network architec-ture for variety of venues from single high riseto multi complex such as University campus,corporate building, hospitality and healthcare.Intelibs provides the turnkey solution for thewireless carriers and venue owners includingthe wireless equipment procurement, sitesurvey, design, commissioning, optimizationand remote monitoring and maintenance.With the unique carrier grade WiFi and 4G/5Gcellular coverage solution, Intelibs providesthe innovative business model enabling boththe venue ownership and wireless serviceproviders to work together to build the truemobility with the simple finance mode.

MANUFACTURING AND TECHNOLOFY RESOURCE CONSORTIUM (MTRC) is New York's Empire State Development's Manufacturing Extension Partnership (NY-MEP) center for the Long Island region. Designed to assist small to medium-sized manufacturing companies develop business growth and increase competitiveness by modernizing equipment and processes, incorporating new technologies, developing new products, improving productivity, assist companies to accelerate technology commercialization and innovation, including prototyping, product validation, and identifying potential funding. The MTRC maintains a consortium of program partners from not only within Stony Brook University but throughout Nassau and Suffolk counties. These resources include experts in technology assistance, research and development, prototyping, workforce training, process improvement, biotech and food manufacturing related consulting and more. Each of these resources have working relationships with company clients in the manufacturing and technology sectors and carries out projects with them to improve various aspects of their business and technology.

JDA SOFTWARE GROUP
JDA Software is the leading supply chain software provider powering today's digital transformations. We help companies optimize delivery to customers by enabling them to predict and shape demand, and improve customer experiences and loyalty. More than 4,000 global customers use our unmatched end-to-end software and SaaS solutions to unify and shorten their supply chains, increase speed of execution, and profitably deliver to their customers. Our world-class client roster includes 75 of the top 100 retailers, 77 of the top 100 consumer goods companies, and 8 of the top 10 global 3PLs. Running JDA, you can plan to deliver.

SOFTHEON delivers cloud-based solutions that create a retail-like, user-friendly experience and provide personalized communication and real-time support to boost member engagement. We build and manage quality, cost effective, and configurable software that supports health plans and states with enrollment, member billing, and reporting for over 3.2 million Americans.

ZEBRA TECHNOLOGIES
Zebra (NASDAQ: ZBRA) empowers the front line of business in retail/ecommerce, manufacturing, transportation and logistics, healthcare and other industries to achieve a performance edge. With more than 10,000 partners across 100 countries, we deliver industry-tailored, end-to-end solutions that intelligently connect people, assets and data to help our customers make business-critical decisions. Our market-leading solutions elevate the shopping experience, track and manage inventory as well as improve supply chain efficiency and patient care. Ranked on Forbes' list of America's Best Employers for the last three years, Zebra helps our customers capture their edge.

Reimagine what's possible

In today's rapidly changing environment, tomorrow's solution may not exist today. As a pioneer at the edge of the enterprise, Zebra is always looking for what's next. We develop industry-tailored, end-to-end solutions designed to deliver a performance edge where it's needed most – the front line of your business.

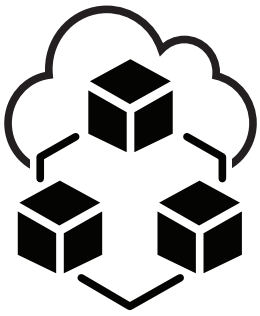
ZEBRA CAPTURE YOUR EDGE

zebra.com

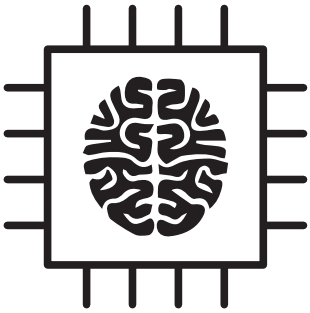
Softheon

Improving value-based care models through BI & Analytics

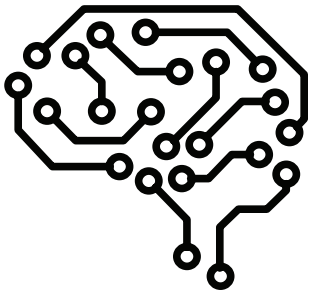
Modeling social determinants of health utilizing:



Big Data



Machine Learning



AI/Analytics

Softheon delivers cloud-based intelligent solutions

- ✓ Fraud Prediction
- ✓ Recommendation Engine
- ✓ Risk Mitigation
- ✓ Decision Support

Making healthcare affordable, accessible, & plentiful

www.softheon.com