



New York Monitor

Advancing Technology for Humanity

A PUBLICATION OF THE IEEE NEW YORK SECTION

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For an event report and more photos please see inside
Photos: courtesy of [Ajoy Das](#) and [Amitava Dutta-Roy](#)

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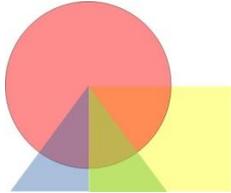
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We have had enough! I mean the snow. Its continuous onslaught this year disrupted our normal activities, to say the least. Though every year we complain about the weather, this year was an exception, really. In the northeast we managed to beat many wintry records. But weren't we fortunate that we had no snow on the evening of our annual award dinner and dance?

The ADD was an enjoyable event and the credit for organizing it goes to our chair of special events David Horn. Inside we offer our readers some online ADD pictures taken by senior member Ajoy Das and yours truly. You may want to keep these photos as remembrances (no copyright implied!). We have also posted bios and citations of our new Fellows and some of the awardees (from those who kindly provided us with the relevant information). They demonstrate

that single-minded hard work and long-term dedication are still admired by their peers at the IEEE in a socially networked world that demands instant gratification. We convey our congratulations to the Fellows and the Awardees.



The IEEE Systems, Man and Cybernetics Society's (SMC's) NY chapter is one of the most active groups in our Section. The chapter recently received the award as the "Best SMC Chapter that has Consistently Shown Outstanding Leadership and Service to its Members in 2014." I had the privilege of attending several of their sessions and could feel the dedication and rapport of the student members. Usually, they start their events with a short video clip of engineers' role in our society, what the IEEE does for advancing technology and the activities of the SMC chapter. The clip is pleasant to view and, at the same time, informative.

Congratulations, folks! Our other chapters can take a cue from you. Recently, I also attended an IEEE Distinguished Lecture event organized by the chapter at the Long Island University, Brooklyn Campus. On 27 February Dr. Daniel S. Yeung, IEEE Life Fellow and former president of the IEEE Systems, Man and Cybernetics (SMC) Society delivered his distinguished lecture on "Sensitivity based Image Filtering for Multi-Hashing." Please see inside for a snapshot of the talk.

In this issue you will also find notices of some science and technology-related events in the New York metropolitan area. Some are offered by the NY Section's chapters. Others are for your information only. We encourage you to browse through the pages and decide if they are worthy of your time. Please also forward the information to your colleagues and friends. Only through dissemination of information we can fulfill our responsibility to the society as engineers Happy reading! ♦

IEEE FELLOWS OF 2015



The IEEE Fellows belong to the highest grade of membership of our professional association. The honor of being selected as Fellows is bestowed on individual members who have demonstrated extraordinary talents, competence and creativity in professional and technical fields recognized by the IEEE. According to the IEEE Constitution the total

number of members upgraded to be Fellows in any one year cannot exceed one-tenth of one percent of the *total* number of voting members. Last year (2014) the IEEE celebrated half century of the existence of its Fellows program and minted two commemorative coins (shown above) to commemorate the occasion. We are proud that this year nine of the New York Section members Have been added to

the list of IEEE Fellows. Seven of them attended the ADD and were formally presented to the attendees of our Annual Award Dinner and Ceremony on 28 February, 2015. We present them to you again through the pages of this newsletter. (The bios and photos are reproduced here with their permission!) ♦



Dr Francisco de Leon: For Contributions to Transformer Modeling for Electromagnetic Transient Studies.

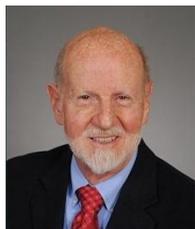
De Leon received the B.Sc. and the M.Sc. (Hons.) degrees in electrical engineering from the National Polytechnic Institute, Mexico City, Mexico, and the Ph.D. degree in electrical engineering from the University of Toronto, ON, Canada, in 1992. He has held several academic positions in Mexico and has worked for the Canadian electric industry. Since 2007 he has been an Associate Professor with the Department of Electrical and Computer Engineering at the Polytechnic School of Engineering of New York University, Brooklyn, NY. His research interests include the analysis of power phenomena under nonsinusoidal conditions, the transient and steady-state analyses of power systems, the thermal rating of cables and transformers, and the calculation of electromagnetic fields applied to machine design and modeling. Dr. de León is an Editor of the IEEE Transactions on Power Delivery and the IEEE Power Engineering Letters.

Dr Monisha Ghosh For contributions to cognitive radio and signal processing for communication systems



Monisha Ghosh is currently a Principal Engineer at InterDigital, working on research and standardization for 5G cellular and next generation 802.11 systems. Previously, she was at Philips Research and Bell Labs working on various wireless systems, most recently on cognitive radio for the TV White Spaces. She received her Ph.D. in Electrical Engineering from the University of Southern California in 1991 and her B. Tech from Indian Institute of Technology, Kharagpur.

Dr Ernest Fellepa: For Contributions to Ultrasound Imaging Medical Applications



Ernest J. Felleppa, PhD, is the Director of the Frederic L. Lizzi Center for Biomedical Engineering at Riverside Research, a not-for-profit research corporation headquartered in New York City. He has been a member of the staff at Riverside Research for more than 45 years where he has been engaged in medical ultrasound research for four decades. Dr. Felleppa is a Fellow of the American Institute of Ultrasound in Medicine, a Fellow of the American Institute of Medical and Biological Engineering, and a recipient of the Joseph H. Holmes Award of the American Institute of Ultrasound in Medicine as a Basic Science Pioneer in medical ultrasound.

Dr Moti Yung: For Contributions to Cryptography



Moti Yung is a Research Scientist with Google and an Adjunct Senior Research Faculty at the Computer Science Department, Columbia University. Before that Dr. Yung was a member of the IBM Research team and a consultant to leading companies and governments, including RSA Laboratories. His main research interests are Cryptography, Security, Privacy, Distributed Computing, and related areas. For over 30 years he has been working on central issues in the scientific foundations and theory of cryptography and on innovation in cryptosystems and their relations to systems security, as well as on actual industrial solutions; he has published and edited over 400 works. He is a fellow of the Association for Computing Machinery (ACM), a Fellow of IACR, and the recipient of the 2014 ACM's SIGSAC outstanding innovation award.

Dr Jianying Hu: For Contributions to Pattern Recognition in Business and Health Analytics, and Document Analysis



Jianying Hu is a Principal Research Staff Member and Manager of Healthcare Analytics Research at IBM T. J. Watson Research Center, NY. Prior to joining IBM in 2003 she was with Bell Labs at Murray Hill, NJ. Hu received the Ph.D. degree in Computer Science from SUNY Stony Brook in 1993. Her principal research interests include statistical analysis of data and images. She now focuses her work on data-driven insights to facilitate “learning health systems”. Dr. Hu has published over 100 technical articles and holds 27 patents. She has served as associate editor for IEEE Transactions on Pattern Analysis and Machine Intelligence, and IEEE Transactions on Image Processing, and is currently on the editorial boards of the journals Pattern Recognition, and International Journal on Document Analysis and Recognition. Dr. Hu is a fellow of the International Association of Pattern Recognition, and recipient of the Asian American Engineer of the Year award.

Dr Yuri Vlasov: For Contributions of Silicon-Integrated Nanophotonics



Yuri Vlasov is a Principal Research Staff Member and Manager at IBM Research. He led the IBM Silicon Nanophotonics project starting from its initial exploratory research stage up to manufacturing and product development. Dr. Vlasov is a Fellow of OSA, APS. He has published over 300 peer-reviewed papers, filed over 100 patents, and delivered over 100 invited, plenary and tutorial talks. He was awarded the IBM Corporate Award, “Best of IBM” Award, as well as was named “Scientist of

the Year” by the Scientific American journal. Prior to IBM, Dr. Vlasov developed semiconductor nanophotonics at the NEC Research Institute in Princeton and at the Strasbourg IPCMS Institute in France. For over a decade, he was also a Research Scientist with the Ioffe Institute of Physics and Technology in St. Petersburg, Russia working on optics of nanostructured semiconductors. He received his MS from the University of St. Petersburg and PhD from its Ioffe Institute (1994), both in physics. For a couple of years, Dr. Vlasov also served as an Adjunct Professor at Columbia University's Department of Electrical Engineering.



Dr Mahesh Viswanathan: For Contributions to Ubiquitous Access to Cloud Computing and to Vehicular Speech

Mahesh Viswanathan is a Distinguished Engineer and Chief Architect for IBM’s Cloud Managed Services responsible for product engineering and technical strategy. In his career at IBM he has built end-to-end solutions in managed services, cloud computing, human-machine interaction, text & audio-video analytics, voice recognition and voice synthesis. Previously, he led the research and development of a conversational system for in-car navigation at IBM’s TJ Watson Research Center. Viswanathan has a PhD in Computer and Systems Engineering from Rensselaer Polytechnic Institute, New York. He has more than 50 technical publications and 50+ patents. He is an IBM Master Inventor, a member of the IBM Academy of Technology.



Dr Murthy Devarakonda: For Contributions to Measurement-Based Analytics of Distributed Systems for Data Center

Murthy Devarakonda, is the Principal Investigator of the Watson EMRA project at IBM Research and Watson Group. The goal of the project is to study how Watson’s natural language processing and semantic reasoning can be applied to meet the cognitive challenges of physicians in using patient medical records. Dr. Devarakonda’s long and multidisciplinary research at IBM involves transforming results of data analysis into foundational observations which lead to new applications and system designs. Dr. Devarakonda is frequently invited to deliver keynote and invite lectures at conferences and academic venues, and often presents the latest Watson innovations to IBM clients. He received PhD. in computer science from University of Illinois at Urbana-Champaign

Dr Deepnarayan Gupta: For Contributions to Superconductor Digital Radio-Frequency Receivers



Deepnarayan Gupta is currently the Executive Vice President in charge of the RF Circuits and Systems business division of HYPRES. Dr. Gupta is a technology pioneer in the area of digital-RF technology that encompasses ultrafast digital, high-quality analog, and high-performance mixed-signal electronics. He has a keen interest in developing the hybrid-temperature heterogeneous-technology (HTHT) systems concept that combines the strengths of various electronic and photonic technologies to solve difficult technical problems. Dr. Gupta served in various capacities, including VP R&D (2003-2012), since joining HYPRES in 1997. He earned B. Tech (Hons.) in Electronics and Electrical Communications Engineering (1990) from the Indian Institute of Technology (IIT), Kharagpur, India. He holds 37 U.S. patents. He serves on the boards of the Applied Superconductivity Conference (ASC) and the United States Committee for Superconductor Electronics, Inc., and represents the IEEE Electron Device Society (EDS) on the IEEE Council on Superconductivity.

2015 IEEE AWARDEES AT THE NEW YORK SECTION

Every year the IEEE also recognizes the technical skills, the spirit of voluntarism, organizational abilities, dedication and a sense of belonging of individuals who decide to give up some of their personal time for the cause of the IEEE that in future will lead to the advancement of technology for

humanity. These individuals are honored by awards at various levels: the main body of the IEEE, one of its major boards, a technical society or its local chapter, and the local Section. Nominations are submitted for each of these awards and the final awardee is selected by a democratic voting process. This year the New Section had the privilege of present-

ing six individual awardees to our members and guests at its annual dinner dance ceremony. We are proud to provide details of these awards. The following list of awardees also includes a major corporation (NYCT) that generously supported our activities during 2014.

And the awardees are . . .

AWARDS FROM THE IEEE REGION 1

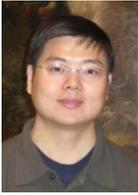
MANAGERIAL EXCELLENCE AWARD



Mark Bienstock: For Outstanding Leadership in Engineering Management of the Design and Construction of the State of the Art Train Communication and Real Time Passenger Information Systems (August 2014)

Mark Bienstock, P.E. is the Program Officer for Systems & Security at MTA New York City Transit. He directs the design & implementation of new technology systems initiatives and electronic security projects for NYCT. Currently he is working on the upgrade and transition to narrowband of the agency's VHF radio system, and the design of a new 700/800 MHz wireless infrastructure for the NYCT bus fleet. He is also involved with the installation of electronic security systems and is working on developing track intrusion detection technology for future deployment in the New York City subways. Mr Bienstock earned his Bachelor and Masters degrees in Engineering from The Cooper Union for the Advancement of Science and Art, New York as well as a MBA New York University.

TECHNICAL EXCELLENCE AWARD:



Jinjun Xiong: For Contributions to VLSI Circuits and Smart Energy Research – August 2014

Jinjun Xiong received his Ph.D. degree from University of California, LA and is currently a Manager and a Research Staff Member at IBM Thomas J. Watson Research Center. Dr. Xiong has published more than 80 technical papers in refereed international conferences and journals, and received numerous Best Paper Awards and Best Paper Award Nominations.

Dr. Xiong made significant contributions to the field of very large-scale integrated circuit designs. In particular, Xiong developed an innovative statistical at-speed structural testing methodology and applied it to 45 nanometer manufacturing technology for chip production. He was PI for the U.S. Department of Energy (DOE) Project on Computation Needs for the Next-Generation Electric Grid. As a member of the IBM's smart energy research team, Dr. Xiong led the simulation efforts for the Pacific Northwest Smart Grid Demonstration Project

IEEE SOCIETY AWARDS

IEEE SYSTEMS, MAN, AND CYBERNETICS SOCIETY (SMCS): OUTSTANDING CHAPTER

NY SMC Chapter: For the Best SMC Chapter that has consistently Shown Outstanding Leadership and Service to its Members. (On behalf of the chapter the award was received by its chair Dr. Ping-Tsai Chung, professor at Long Island University, Brooklyn Campus.)

POWER & ENERGY SOCIETY (PES)

Patrick Dilillo: For outstanding contributions to the Power and Energy Industry and the High-Voltage Switchgear Standards Committee

(Bio and photo N/A)

NEW YORK SECTION AWARDS

FRIEND OF THE IEEE AWARD

MTA New York City Transit: For exemplary support of the IEEE NY Section and its core mission to foster technological innovation and excellence for the benefit of humanity

NEW YORK SECTION CHAPTER AWARDS

POWER & ENERGY SOCIETY/INDUSTRY APPLICATIONS SOCIETY: OUTSTANDING ENGINEER AWARD

Mr William Montgomery: In Recognition of his Leadership and Meritorious Contributions to the Chapter

(Bio and photo N/Ae)

VEHICULAR TECHNOLOGY SOCIETY: ENGINEER OF THE YEAR AWARD



Mr. David Follins: For his outstanding engineering and leadership contributions to New York City Transit's R179 Rail Vehicle Program

David is the R179 Project Manager of Car Equipment Engineering at New York City Transit. Prior to his entry into the Division of Car Equipment, David spent two years at the Central Electronics Shop of Subway's Electronic Maintenance Division where he was responsible for overseeing the acceptance of bench test equipment to be used for the repair of electronic modules residing in various new car contracts. David serves as a volunteer for St. Vincent Ferrer Church and has spent over ten years coaching football, basketball and soccer for various youth organizations. David graduated from Polytechnic Institute of New York in Electrical Engineering and has a NY State registered Certificate in Software Engineering.

WOMEN IN ENGINEERING (WIE) AFFINITY GROUP AWARDS

Mr. Joseph Soryal: In appreciation for Notable Services and Contributions Towards the Advancement of IEEE and the Engineering Profession

Joseph Soryal obtained his BE and ME degrees from the City College of New York, CUNY in electrical engineering and his PhD from the Graduate Center, CUNY. Currently, as a Senior Member of Technical Staff in AT&T Labs he works on the cloud security, virtualized networks, and SDN for VoIP and video services. He teaches Networking and Security as an adjunct Assistant Professor in the City College of New York. His research interests include cyber security, telecommunications networks, smart grids, and connected vehicles. (Photo not available)

**The New York Section of the IEEE
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Daidone Electric
Faiveley Transport
SYSTRA
Halmar Transportation Systems
Dellner, Inc
Affinity Resources Company, Inc
IBM**

Did you know that whenever you prod Google to search an item it is capable of spitting out 63 million probable matches in just 0.31 seconds? This is not a figment of



The primary purpose of the SMC Society Distinguished Lecturer Program is to help Society Chapters provide interesting and informative programs to serve the needs of members of the SMC Society and to enhance their professional vitality by keeping them informed of new technological developments and applications. The SMC Society shares the costs incurred for realizing the plan which may be used by IEEE chapters, sections and student groups. IEEE student groups are especially encouraged to make use of the Program to invite outstanding speakers. Distinguished lecturers receive no honorarium.

imagination according to Prof. Daniel Yeung, PhD, IEEE Fellow and a former president of its SMC Society. Dr Yeung was invited to deliver an IEEE Distinguished

Lecture on the subject of searching for images at the Society's NY Chapter. Dr. Yeung should know, since he guides several researchers involved in search algorithms.

A talk on technology can be dry, lulling most listeners to sleep or interesting when the lecturer identifies himself / herself with the audience and adapts the pace and the content with the mood of the attendees from their subtly perceivable body languages. Dr Yeung's talk definitely followed the second line. He was witty, humorous and shared his knowledge without any pomposity.

Dr. Yeung began his talk titled "Sensitivity based Image Filtering for Multi-Hashing" and gave some staggering numbers with regard to the cyber age.

According to a 2012 IBM report the global capacity to store information has doubled roughly every forty months since the 1980s. For example, in the year 2012 alone, 2.5 quintillion (i.e., 2×10^{18}) bytes of data were created. Some ninety percent of the world's

data were created during the last two years. If we consider spam messages, 94 billion of them are generated every day costing several billion dollars annu-



Daniel Yeung received his Ph.D. degree in applied mathematics from Case Western Reserve University. He is now a Visiting Professor, at the School of Computer Science and Engineering, South China University of Technology, China. Previously he worked at Rochester Institute of Technology, Case Western Reserve University, General Electric Research Center and TRW. (Please see below for more)

ally. Video streams are also gaining ground at a superlative rate.

We must furthermore reckon that data are not uniformly stored in databases. They are archived and, for retrieval transmitted in a variety of formats: images, text, Web pages, audio and video clips etc. In addition, much of the data is unstructured and thus it is not even possible to maintain a uniform quality of data. That quality depends on the existence or absence of any recognized protocols at the storage end. In the true open spirit of the Internet, the receiver of information cannot dictate the way the data should be organized by individuals or entities that archive



Prof. Daniel Yeung

the information for a variety of end objectives. Tech writers, for instance, may want to store their data in a way that is incompatible with that of fiction writers. Medical records and databases are not organized in the same manner as those for human resources de-



Searching for images needs multiple hashing

partments, for example. In some countries first name is more important than the last name and their data-

bases may not look the same as we are used to in this country.

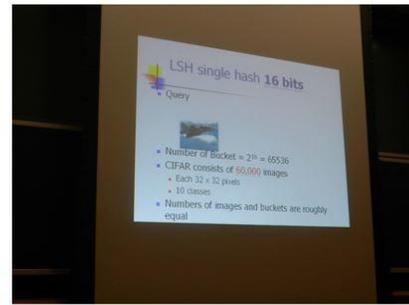
Data transmitted over the Internet, in general, are not monitored unless there is a compelling reason to keep a check on criminal activities, political propaganda and identity theft etc. All kinds of malevolent practices are to be expected in the labyrinths of the data retrieved by the Internet. The question is therefore how to cut through the clutter and search for the items we specifically want. Legacy character-by-character searches would take too long to be of any practical use. To summarize in a few words the complexity of oceans of data, Yeung mentioned the principal characteristics of data in cyberspace: large volume, diversity, class imbalance, concept drift and some perhaps simply adversarial or malevolent. These characteristics together with the humongous figures earlier presented by Yeung indicate that classical storage and search methods are no longer efficient

Engineers, by nature, are passionate about coming up with practical solutions to complex problems.

No wonder that for scouring through large databases in shortest possible times the computer scientists and engineers have devised appropriate methods, known as hash algorithms. (Since not all our members are familiar with hash techniques, a lightweight overview of hashing may be of some help especially as we plan to post a longer informational article on Dr Yeung's image search algorithms in the near future.) The basic principle of hashing for information storage and retrieval is not difficult to grasp. Take for example, my first name: Amitava. For computer storage purposes it can be represented by a long string of binary bits. Let us assume that the two adjacent first names in a hypothetical database are Alex

and Amir. The binary strings representing those two names would be shorter (four alphabetic letters) in length than that for my name (seven letters). Conventional search for any of these three names would first look for the first letter (A). Once the machine has finished searching the entire database for the first character, it would start looking for the second character and so on. If the database happens to be huge it would take an enormously long time to finish the search and produce a final and *accurate* result. Note that names can consist of strings, some short, some unusually long and some in between. Each letter in a name, be first or last, may be one of the 26 characters of the Roman alphabet set (and their binary equivalents). The reader can now imagine how many machine iterations and how much time it will take to come up with a perfect match for a name (of arbitrary length) lodged in a large database in these days of Big Data! If however,

If however, we could somehow represent and store each name (or a keyword) by a shorter string with a fixed number of digits (say, only four decimal digits to simplify our example) independent of the length of the original string our store and search processes would be much faster. For, the search algorithm would then have to examine only four digits where each digit can be only one of 10 numbers (0-9). The downside of this shortcut would be that a search process in this hypothetical system would be faster but the result might not be precisely what we expect but all names in that simple database that promise to offer *highly probable* matches.



A query for a match for a fighter jet

Re-searchers have proposed and successfully implemented various mathematical methods, from very simple to highly complex, for obtaining shorter representations (not necessarily four digits) that are not only computationally efficient for store and search operations but also provide adequate security measures against hacking. The simplest illustration of this would be to assume a suitable hash number. Let that hash number perform an operation (say division for example) on the string representing the original name or keyword. Now if we keep the first four digits of the result of that division they can create a shorter string representing a name.

We would continue this process until we have exhausted all required names in the database of names and put the shorter strings in a table, called hash tables. Each short representation is held in an indexed *bucket*. In most cases it is unlikely that two of the short strings in a hash table will be identical. However, if the first few digits of the string of the queried name happen to be the same as those of another string their buckets are linked by a *chain* so that a further search for subsequent characters will not be forced to start at square zero again. The operational function (a division in our example!) is known as a



Search parameters may be changed to fine-tune the process

hash function. The hash functions used in real situations are much more complex and beyond the scope of this report. Bear in mind that even a more complex hashing function may not display a precise and unique result. Instead, we can expect to see a bunch of results that will offer a highly probable match with the queried name. The goal is to raise that probability higher and higher. Superfast hash algorithms are proprietary and most treasured assets of search



The parameters are changed to get acceptable results



Results may not be acceptable until

companies. It is difficult if not well nigh impossible to make any sense of a hash table without the knowledge of the hash number and the hash function. The original database is literally hashed. Note: however, the word hash has nothing to do with the # symbol used in social network.

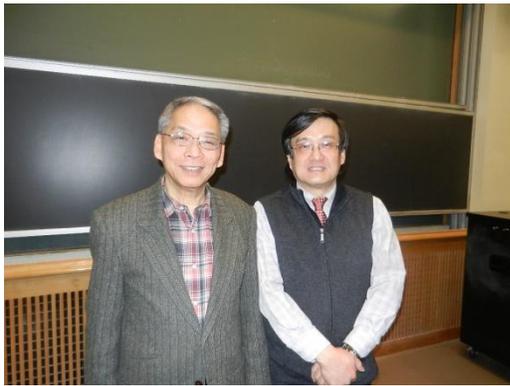
Now that we have described the search and hashing operation on a simple database of one-dimensional strings for names the reader can imagine how complicated it would be to search two-dimensional images (ignoring the colors for the time being). Shape of the queried image, its size and the number of pixels—in fact, a whole gamut of parameters—enter the equations. Image searches are essential for identification of criminals, weaponry and patent infringements etc. But bear in mind that the results will be just approximations at their best. Hence, it may be necessary to change the parameters for successive searches until an acceptable result is obtained.

Try to experiment with a quest for a common picture in the Google image search feature. You will be amazed to see the variety in the results. In general, the precision rate of the set of returned images is hardly acceptable. Hence a number of filtering techniques has been proposed to improve the precision rate, with a very small drop in the recall rate. The objective of Dr. Yeung's research group, is to find a better filtering technique that satisfies these two objectives. A neural network for image searches, conceived by Yeung's group, is trained to rank the returned images based on three input parameters: Hamming Distance, Location Sensitivity Measure (LSM), and Bucket Sensitivity Measure (BSM). The empirical results presented by Dr. Yeung are encouraging and statistically convincing. Some of these concepts will be described in a subsequent article. The editor thanks Dr. Daniel Yeung for his Distinguished lecture and a review of this report. – Amitava Dutta-Roy, PhD, Life Fellow, *Editor*

More on Dr Yeung: For seven years he was a chair professor and the chairman of the Department of Computing, The Hong Kong Polytechnic University. Dr Yeung was also the founding chairman of the IEEE SMC Hong Kong Chapter, and is the general chair of 2015 International Conference on Systems, Man and Cybernetics, Hong Kong, China. <http://www.smc2015.org/committee>



The IEEE SMC New York Chapter, the host of the Distinguished Lecture was awarded the Outstanding Chapter of the Society (2014)



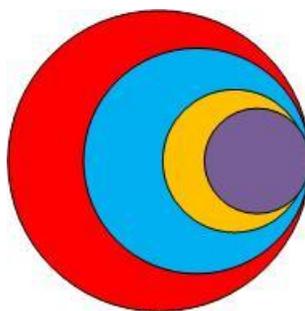
Profs Daniel Yueng and Ping-Tsai Chung, chair of
SMC Chapter in NY



Prof Daniel Yeung, Dr. Amitava Dutta-Roy and
Prof Ping-Tsai Chung



The Distinguished Lecturer and the attendees



EVENTS SUPPORTED BY THE IEEE IN NEW YORK AND VICINITY

The IEEE supports many programs all over the world that encourage young people to study science and engineering. Following this global trend the volunteers of the IEEE New Section have always enthusiastically helped science and technology fairs organized by educational institutions in the tri-state area. Recently, our members participated in the Be An Engineer program at the Hudson Valley Engineering EXPO held at White Plains High

School, White Plains, New York. You can get more information about the fair at <http://www.beanengineer.org/home.html>. We hope that you too as an individual or your company will join us in 2016 EXPO to make it a success. Please get in touch with the school. More information will be posted in the pages of the NY Monitor as soon as they are made available to us.



Dr. Shu-Ping Chang, SM, a former chair of the NY Section in attendance at the IEEE booth



2015 IEEE Region 1 Annual Student/Young Professional, and Women in Engineering (WIE) Conference

April 10-11, 2015 – University of Vermont, Burlington Vermont

Date:
April 10-11, 2015

Location:
Sheraton Burlington Hotel



The IEEE Region 1 Student Conference is the premier annual event where all student branches from IEEE Region 1 (Northeast Region of United States of America) will meet.



Union College and
IEEE Schenectady Section
present

The Steinmetz Memorial Lecture for 2015



Ms. Lynn Conway
Professor Emerita, University of Michigan



Our Travels Through Time: Envisioning Historical Waves of Technological Innovation

Tuesday, April 21, 2015

Lecture at 7 pm in Nott Memorial building, Union College free and open to the public.

Optional buffet dinner (Orzo Stuffed Chicken or Vegetarian Lasagna)
at 5:30 pm in Hale House, Union College for \$20.⁰⁰

Monitor <http://sites.ieee.org/schenectady/> for additional information (campus map, parking).

This talk will reflect on past waves of innovation including the rapid spread of AC electrification propelled by Charles Steinmetz. Ms Conway will then help us to envision the next wave of innovation as almost everything becomes embedded with ever-tinier and ever-more empowering modular microsystems.

Lynn Conway invented computer techniques that propelled the computer revolution that is familiar to all of us. She is responsible for key innovations that allowed computer chips to grow much smaller and more complex. These innovations enable today's complex rapid communications switching, smart phones, personal computers, missile guidance systems, satellite communications, robotics, virtually anything with high level computer systems and small physical envelopes.

A member of the National Academy of Engineering, Ms Conway holds five U.S. Patents for inventions on visual communications and control, and has received many major national and international awards.

Ms Conway has also served on the U.S Air Force Scientific Advisory Board and numerous committees of the National Science Foundation and the National Academy of Engineering. Her book, *Introduction to VLSI Systems*, has been used in college engineering courses around the world.

For those attending the dinner please make checks payable to:
IEEE Schenectady Section

Return check to: Professor Frank Wicks
216 Steinmetz Hall, Union College
Schenectady, New York, 12308
(518 388 6267)
State whether you prefer "Orzo Stuffed Chicken" or "Vegetarian Lasagna"

Please provide your name and email for confirmation of reservation.

Our Science Fair Needs YOU!

We need your help! Please join your fellow experts and give back to our children - show them how great science is! And have fun too!

JUDGES WANTED for the Annual Tri-County Science & Technology Fair (Westchester, Rockland & Putnam Counties)

Date: Saturday, April 25, 2015

Time: 8:30 AM until about 12:45 PM - light breakfast and lunch included!

Where: White Plains High School, 550 North St. (Rte. 127), White Plains

From south or east, take the Hutchinson River Pkwy north. Exit at Exit 25-Rt. 127.

Take a left at the top of the exit ramp. Go about 1 mile. It's on the right side.

From the north or west, take the Sprain or the Saw Mill R. Pkwy south.

Exit at Cross Westchester (I-287 East). Take exit for and follow signs to Route 127.

White Plains HS will be approximately 1 mile on the left.



Grades: Elementary through High School

Categories: Biology, Chemistry, Mathematics/Computers, Engineering/Technology, Environment, Earth/Space Science, Health & Medicine, Physics, Psychology

Register online at: <http://tinyurl.com/tcsf-judges-form>

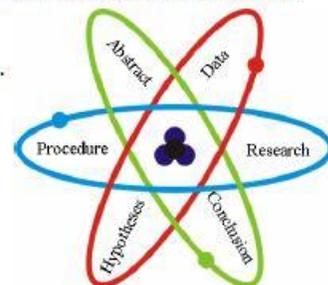
Please tell your colleagues and science friends about this great event.

Thanks again for helping, and we look forward to another successful Fair!

Tri County Science & Technology Fair
c/o Putnam Children's Discovery Center, Inc.
PO Box 222
Carmel, NY 10512

Need more information? Questions?
Please contact us by e-mail at pcdctcsf@gmail.com or
at 845-621-1260 x-402

Please Post & Distribute



Dream it Code it Win is a competition for students planned and organized by the nonprofit MIT Enterprises Forum of NYC and MIT Alumni Association of NYC jointly with Trading Screen.

The objective of this competition is to “Unleash Opportunities with Technology” for young people. The potential participants are High School and College Students. Computer Science has never been more exciting! You can enter this competition and then at the award ceremony hear a panel of visionaries discuss how computer science education can be used as a tool to create many opportunities by solving problems or creating efficiencies across many industries. We were told that in 2014 50% of the participants were females.

Dream it. Code it. Win it. Awards and Networking Reception:

**Cooper Union
Great Hall
7 East 7 th Street
New York, NY
30 April, 2015:6.00pm**

College Level Prizes

- **\$10,000 - TradingScreen Technology Entrepreneurship Award** Presented by **Philippe Buhannic**, Co-Founder and CEO of **TradingScreen**
- **\$10,000 - Women’s Prize** Presented by **Georgia Garinois-Melenikiotou**, EVP Corporate Marketing, **Estée Lauder**
- **\$30,000** - A number of Innovation and Problem Solving Prizes.
- All applicants will receive a "**Qualified Participant Certificate**".

High School Prizes

- All applicants will receive a "**Qualified Participant Certificate**".
- Each winning team will receive one of a number of prizes:
 - Microsoft Surface Pros
 - Kaplan ACT/SAT Prep Courses
 - Federal Reserve Bank of New York – Tech Career Day
 - Others will be announced shortly

For rules for entering the competition visit <http://www.tradingscreen.com/index.php/careers/mit-stem-ny-creative-code-competition> or [Facebook.com/dreamITcodeITwinIT](https://www.facebook.com/dreamITcodeITwinIT)

Good luck if you decide to enter!



1st IEEE International 5G Summit

Venue: Friend Center at Princeton University

Date: Tuesday, May 26, 2015

#PRINCETON5G, Twitter: @5GSUMMIT_COMSOC

Keynote Speakers



Dr. Marian Croak
Google



Joe Cozzolino
Cisco



Dr. Ed Amoroso
AT&T

Eminent Speakers



Prof. Mung Chiang
Princeton University



Prof. Dipankar
Raychaudhuri
WINLAB



Dr. Xiao-Feng Qi
Huawei



Prof. Henning Schulzrinne
Columbia University



Asha Keddy
Intel



Dr. Chih-Lin I
China Mobile



Dr. Malcolm Robertson
Keysight Technologies



James Kimery
National Instruments (NI)



Tim Grance
NIST

Contact Info:

Email: ieee5gsummit@gmail.com

Twitter: @5GSUMMIT_COMSOC

URL: <http://www.5gsummit.org>

Directions:

Friend Center at Princeton University
35 Olden Street, Princeton, NJ
<http://m.princeton.edu/map/>

This is a high impact one day summit, organized by IEEE Communication Society, to engage the Industry and Academic communities with high value and innovative technologies in such emerging areas as SDN/NFV, 5G, IoT, Big Data & Analytics, and Cybersecurity. This event will provide a platform for the industry leaders, innovators, and researchers from the university and academia to collaborate and exchange ideas in these emerging technologies that will help in driving standards development and rapid deployment.

Highlights

Keynote Speakers:

- Dr. Marian Croak, VP of Access Strategy and Emerging Markets, Google
- Dr. Edward G. Amoroso, SVP and Chief Security Officer, AT&T
- Joe Cozzolino, Senior VP, Cisco

Other Confirmed Speakers include:

- Dr. Doug Zuckerman, Past President, IEEE Communication Society
- Tim Grance, Senior Scientist, NIST
- Asha Keddy, GM and VP, Intel
- Prof. Vince Poor, Princeton University
- Prof. Ramjee Prasad, Aalborg University
- Prof. Henning Schulzrinne, Columbia University
- Prof. Mung Chiang, Princeton University
- Prof. Dipankar Raychaudhuri, WINLAB, Rutgers University
- Dr. Chih-Lin I, Chief Architect, China Mobile
- Dr. Xiao-Feng Qi, Senior Director, Huawei
- James Kimery, Director, National Instruments
- Dr. Malcolm Robertson, CTO Office, Keysight Technologies

Advance registration is now open for the 5G Summit through 11:59 pm EST on Sunday, May 10, 2015. The advance registration fee is \$50 (IEEE/ACM members) / \$75 (non-IEEE/ACM members). The regular fee (after May 10) is \$75 (IEEE/ACM members) / \$100 (non-IEEE/ACM members). Registration fees for full-time students and Life members are \$25 and \$30, respectively. The summit will conclude with a networking reception.

Additional information on registration, housing, and other conference logistics are available at <http://www.5gsummit.org>.



Celebrating 125 Years
of Engineering the Future

EVENTS AT A GLANCE

Below we present a list of events on science and technology in the New York Metro area in April 2015 and beyond

Wed, 1 April, 2015

1pm-7:30pm
Davis Auditorium
Columbia University
New York

Prior registration necessary. For more information visit Web sites in the opp. Col.

Registration at no cost

Fri/Sat, 10-11 April, 2015

Sheraton Burlington Hotel & Conference Center, Burlington, Vermont

Wed, April 15, 2015

6:30pm-8:30pm
German House
871 UN Plaza

First Avenue at 49th St
RSVP required by 10 April

Visit Website:
germaninnovation.org
Registration at no cost

**Sponsor: School of Engineering,
Columbia University, New York**

Mini-Symposium on Internet of Things (IoT)

More information this event may be found at

<http://datascience.columbia.edu/iot-2015> and
<http://roam.me.columbia.edu/iot-symposium>

Podcast of this symposium is available at

<https://www.youtube.com/watch?v=mi7S7sCkLqo&feature=youtu.be>

Sponsor: IEEE Region 1

**Region 1 Annual Students/Young Professionals
And Women in Engineering (WIE)
Conference**

University of Vermont, Burlington

For more information please visit:

<http://babak-beheshti.com/region1-students-activities-page.shtml>

Please see the flier posted in this edition of the Monitor

**Sponsor: German Center for Research and Innovation and
Volkswagen of America, Inc**

The Role of Higher Education in the Future of Workforce Development

Panelists:

Dr. Jim Barrott

Vice President for Technology and TCAT Director. Chattanooga State Community College

Dr. Sanjoy Mahajan, Visiting Associate Professor of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Associate Professor of Applied Science and Engineering, Olin College of Engineering

Sebastian Patta, Executive Vice President for Human Resources, Volkswagen Group of America, Chattanooga Operations, LLC

Moderator:

Stefanie Jehlitschka, Vice President, German American Chamber of Commerce of the Southern U.S.A, Inc.

Fri, 17 April, 2015

1:30pm-2:30pm
Davis Auditorium
750 CEPSR
Columbia University
New York, NY

Fri, 17 April, 2015

6pm-7pm, Room 3-04
A reception to follow the presentation
Law School F
Fordham University
Lincoln Center Campus
New York

For directions and information, please contact Dr. Frank Hsu at hsu@cis.fordham.edu or 718-817-4483. Parking is available at several garages near the Lincoln Center Campus.

All are invited

**Sponsor: Columbia Integrated System Lab
Columbia University, New York**

**SSCS Distinguished Lecture
Silicon-based Circuits and Systems at the Terahertz Frontier**

Abstract:

The push for novel applications in the sub-millimeter wave region of the electromagnetic spectrum has raised the bar on RF circuit design and characterization. Continued device scaling enables circuits to operate at frequencies so high that contactless wafer testing (in free space) is the last resort. This talk will summarize the frontier of this work. It follows practical CMOS and SiGe BiCMOS design examples including 0.5 THz high-power oscillators, sub-harmonically operated receivers and transmitters up to 0.8 THz, and broadband direct detectors for active imagers running well beyond 1 THz.

Speaker:

Dr Ullrich Pfeiffer received the Ph.D. in physics from the University of Heidelberg, Germany, in 1999. Till 2006 he was with the IBM T.J. Watson Research Center where his research involved RF circuit design and packaging for 60GHz communication. Since 2008 he holds the High-frequency and Communication Technology chair at the University of Wuppertal, Germany. He is a Senior Member of IEEE, has authored and co-authored 100+ publications and has been the co-inventor of 10+ US and international issued patents, relating to RF, millimeter-wave, terahertz communication/imaging circuits and sensors.

**Sponsors: Fordham University of New York and the IEEE
Computer Intelligence Society NY Chapter**

Clavius Distinguished Lecture 2015

**Intelligent Big-Data Monitoring of
Critical Infrastructure Systems**

This talk is a multidisciplinary comprehensive presentation addressed to current and future scientists, artists, engineers, and social scientist.

Abstract:

Modern societies have reached a point where everyday life relies heavily on the reliable operation and intelligent management of critical infrastructures, such as electric power systems, telecommunication networks, water systems, and transportation systems. The design, control and fault monitoring of such systems is becoming increasingly more challenging as their size, complexity and interactions are steadily growing. The current trend is towards the use of a larger number of sensors, leading to so called big data environments. However, in situations where faults arise in one or more of the sensing devices, this may lead to a serious degradation in performance or even to an overall system failure, especially as a result of propagating faults in interconnected subsystems. The goal of this presentation is to motivate the need for intelligent monitoring, fault diagnosis and security of critical infrastructure systems and to provide a methodology for detecting and isolating multiple sensor faults in a class of nonlinear dynamical systems. The detection of faults in sensor groups is conducted using robust analytical redundancy relations, formulated by structured residuals and adaptive thresholds. Various estimation and learning algorithms will be presented and illustrated, and directions for future research will be discussed. (continued on the following page)

Tue, 21 April, 2015

6:30pm

Room 1S-F53 (entrance floor)
New York Medical College, 19 Skyline
Drive, Hawthorne, NY 10532.

Speaker:

Professor Marios M. Polycarpou is a Fellow of the IEEE. He was the president of the IEEE Computational Intelligence Society (2012 and 2013). He also served as the Editor-in-Chief of the IEEE Transactions on Neural Networks and Learning Systems between 2004-2010. Currently, he is a professor of Electrical and Computer Engineering and the Director of the KIOS Research Center for Intelligent Systems and Networks at the University of Cyprus. Prior to his current position he was a professor of Electrical and Computer Engineering and Computer Science at the University of Cincinnati, Ohio. He received the B.A. degree in Computer Science and the B.Sc. degree in Electrical Engineering both from Rice University, Houston, TX, and the M.S. and Ph.D. degrees in Electrical Engineering from the University of Southern California, Los Angeles.

**Sponsors: IEEE Tappan Zee Subsection and
SME Westchester 216 & ASME Westchester County Chapter**

**Computers and Software; the Supreme Court's New Rules
Explored**

Abstract:

The US Supreme Court, in its ruling in the matter Alice Corporation v. CLS Bank International, provided further guidance regarding what is patentable subject matter, particularly with regard to software methods and processes. This guidance affects banks, insurance companies, pharmaceutical companies, and anyone with inventions that deal in economic practices (e.g., settlement risk); methods of organizing human activities; and work in areas driven by mathematical relationships/formulas and patenting genes. The presentation will offer a short discussion regarding the laws under which patent applications are reviewed, a short historical perspective, a summary of the current situation, and discuss possible solutions

Speaker:

Carl Giordano, Esq (Law Office of Carl Giordano, PA, *E-mail*: cagiordano@ieee.org). Mr. Giordano is registered with the U.S. Patent and Trademark Office and also with in New York, New Jersey and Connecticut. He has over 15 years experience in patent prosecution and litigation in the electrical and mechanical arts. He has prepared and prosecuted patent applications in wireless communications, networks, digital signal processing, video processing, semiconductor lasers, and their fabrication, and flat panel display technologies. Mr. Giordano has over 25 years of engineering and technology experience that includes feasibility studies and simulation of digital satellite communication systems, development of hardware and software processing systems used in Electronic Warfare in the detection and identification of RADAR systems, and in VHF/UHF digital radio and optical communications systems. Mr. Giordano is a graduate of Pace University School of Law and holds a Bachelor of Engineering (Electrical) degree and a Master of Engineering (Electrical) degree from The City College of New York.

**Fri, 24 April, 2015
6pm-8pm**

Room HS 119
Long Island University
Brooklyn Campus
Brooklyn, NY
All are welcome
Please send a RSVP to
Prof. Ping-Tsai Chung at
Ping.chung@liu.edu
or
Dr Amitava Dutta-Roy at
a.dutta-roy@ieee.org

**Sponsors: IEEE SMC Chapter, Education Society Chapter and
The Historian of the New York Section**

Dark Matter Theory for Oregon Vortex, Mystery Spots and Gravity Hills

Abstract

In this talk the speaker will share his 21-year research has found six sets of important evidences against the Illusion Theory He will describe his analysis of available information on gravity hills and mystery spots.

Gravity Hills: Many people have observed and reported a strange gravity phenomenon on strange slopes of paved roads at hundreds of locations all over the world. People pour water on such strange slope and water flows uphill. People put plastic water bottle on such strange slope and the plastic water bottle with water rolls uphill. Vehicles with transmission shifted to neutral gear and brake released simply roll uphill on such strange slopes.

Mystery Spots: At Oregon Vortex in Oregon, USA and several other similar known Mystery Spots, one of several well known mysteries is the significant change of relative heights of two persons when they switch their standing positions on a level platform inside the Mystery Spot area.

Illusion Theory: Many people simply dismiss such strange gravity phenomena on those gravity hills and in those Mystery Spots as illusion. The Illusion Theory asserts that the gravity in those gravity hills and Mystery Spots is normal and all the observed strange gravity phenomena and mysteries are due entirely to illusion in human perception. Some people have also done some tests and measurements on some of those gravity hills and claimed that they have proved that it is an illusion.

Speaker:

Dr. Sing H. Lin, IEEE Life Senior Member is a telecommunication engineer and manager with technical expertise in wireless communication technologies. He received his Ph.D. Degree in Electrical Engineering from the University of California at Berkeley. He joined Bell Laboratories, New Jersey in 1969. Lin was a district manager for Wireless Standards Management in AT&T Laboratories and was the Director for wireless technologies in Telcordia (formerly Bellcore) from 1984 to 1998. Dr. Lin is the recipient of Bellcore Award of Excellence. He has 68 technical publications and presentations to his credit, 3 patents, and a Chinese certificate of a copyright on a mapping table for Chinese Spelling Code. Dr. Lin has been interested in cosmic matters since his student days and throughout his professional life. Even now as a retiree he continues with his research into the frontier of science and the great puzzles and mysteries of nature.

Sat, 25 April, 2015

8:30am- 12.45pm
White Plains High School
550 North St. (Rte 127)
White Plains
Registration: RSVP is requested. Registration Link is
<https://meetings.vtools.ieee.org/m/34172>

**Annual Tri-County Science and Technology Fair
(Westchester, Rockland and Putnam Counties)**

JUDGES WANTED

More information at:
Register online at <http://tinyurl.com/tcsf-judges-form>
Please see the flier posted in this edition of the Monitor

Tue, 28 April, 2015

5pm-7pm
ConEd Building
4 Irving Place
(at 14 St East)
New York, NY
One block from Union Square
RSVP to Prog Chair
Arnold Wong
212 460 4189
e-mail preferred at
wong@coned.com

Thu, 30 April, 2015

6pm
Cooper Union
Great Hall
7 East 7th Street
New York, NY

Tue, May 26, 2015

Friend Center at
Princeton University, NJ

**Sponsors: IEEE NY Section: PES & IAS Chapters and
Consultant's Network Affinity Group and and PACE
What Baby Boomers Need to Know to Maximize Retirement In-
come**

Know about:

Will Social Security be there for me?
How much can I expect to receive?
When should I apply for Social Security?
How can I maximize my benefits?

Speaker:

Robert Leitner, CFP

Robert Leitner is a Certified Financial Planner and Registered Investment Advisor with over 30 years' experience in the financial services industry specializing in Retirement Income Planning.

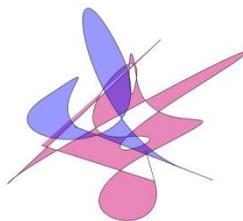
**Sponsors: MIT Alumni Association of New York and Trading
Screen**

**Dream it, Code it, and Win it. Awards and Networking Re-
ception**

For more details please see the flier posted in this edition of the Moni-
tor

**Sponsors; IEEE, IEEE Region 1, ComSoc, IEEE North Jersey and New Jersey
Coast Sections, and CTIF-USA**

**1st IEEE International 5G Smmit
For more information and registration please see the flier**



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The IEEE NY Monitor is published online monthly excepting in July and August. The target readers are IEEE members (more than 4,000) who reside in New York City and vicinity. It is also downloaded by many of the 30,000+ members of the IEEE Region 1 that covers 22 Sections of the IEEE in the entire northeastern United States.

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Full page	\$250

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THIS IS THE END OF THIS MONTH'S NY MONITOR

Thank you for reading!