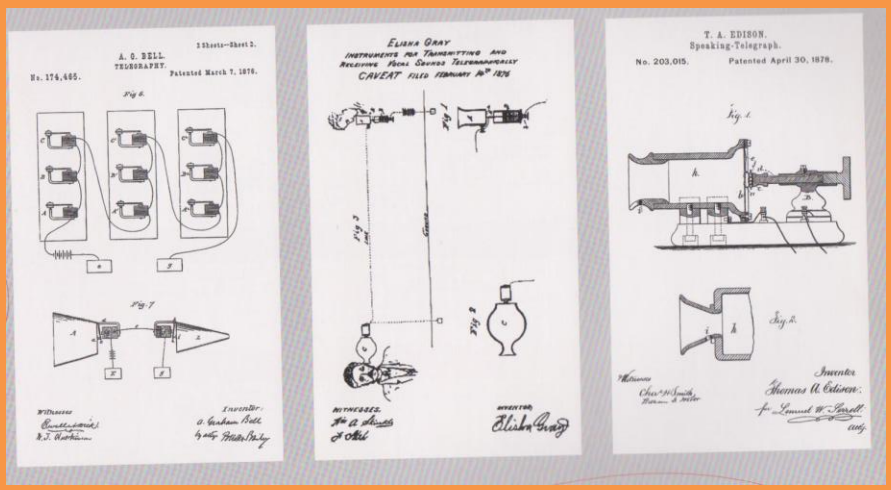
New York Monitor

*Advancing Technology for Humanity*

A PUBLICATION OF THE IEEE NEW YORK SECTION

# MAY, 2017




**Left: Patent No. 174,465 of Alexander Graham Bell shows his telegraph for sound and voice**

**Middle: The 1876 patent by Elisha Gray who submitted his patent application only a few hours after Bell did his. Grey's application was for a of "transmission and reception of vocal sounds by telegraph." Gray lost his bid to the latter due to the time lag between the two applications**

**Right: Thomas Alva Edison patented various improvements soon after Bell patented his invention. It resulted in fierce legal dispute between Bell and Edison who called his improvement "talking telegraph"**

IEEE NEW YORK SECTION

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*We advance technology for the benefit of humanity*

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- Computer Society
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- Power and Energy Society
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- Solid State Circuits/Electron Devices Societies
- Systems, Man and Cybernetics Society
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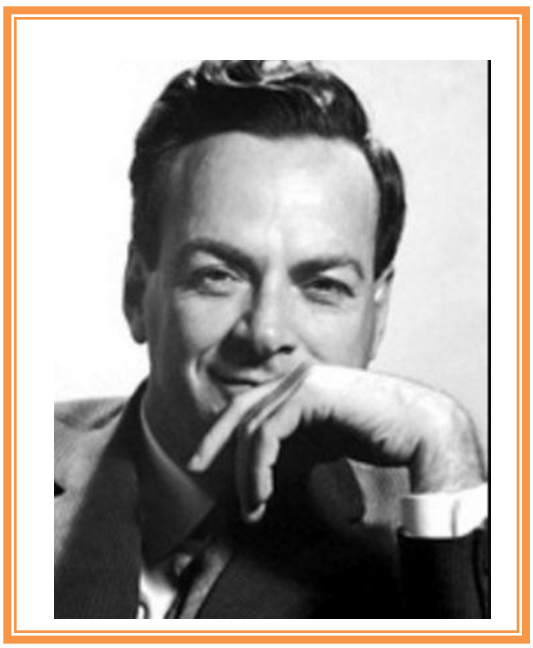
**AND**

**The following Affinity Groups as defined by IEEE**

- Consultants' Network
- Life Members
- Women in Engineering
- Young Professionals



*Our responsibility is to do what we can, learn what we can, improve the solutions, and pass them on*

**Richard P Feynman**

**Physicist, Nobel Laureate (1965)**

**Born 11 May, 1918: Far Rockaway, Queens, New York**

**Died: 15 February, 1988: Los Angeles, California**

**THIS IS WHAT YOU WILL SEE IN THIS POSTING OF THE MONITOR.**

I admit: the period covering the last two months has not been a very palatable for me. The dearth of critical mass of information on IEEE activities, the heat from the relentless sun, and finally, some physical impediments have caused the delay in posting the special edition of our Award Dinner and Dance event. But as they say, it is never too late to right a situation. In this posting


In this posting you will read, and more interestingly, view the photos taken at our Section's annual Award Dance and Dinner (ADD) that was held at the Midtown Hilton Hotel and Towers on the Avenue of the Americas, New York on 6 May last. At this event the stars of the IEEE: the newly elevated Fellows and recipients of awards from the IEEE Chapter, Section and Region 1 levels — all belonging to the NY Section — were proudly presented to the attendees. All Fellows and the awardees did worthwhile jobs that would someday bring benefit to humanity, the goal of the IEEE. But what did the Fellows really do to earn the elevation of their membership grade? Read about them in their own (unedited) words. Most of the photos were taken by Wilson Milian, our Section chair, and Kai Chen (both of MTA NY CTA)..We thank both of them for their help in making the ADD another memorable one. Click on https://goo.gl/cczTqc here to see their photos. The rest of the photographs were taken by this editor of yours: https://goo.gl/fhvuea

# 2017 IEEE NY SECTION MEMBERS ELEVATED TO FELLOW GRADE

**Amitava Dutta-Roy, Editor and Life Fellow**

This year the membership of our six colleagues in the NY Section (three of them from Tappan Zee subsection) was elevated to the Fellow grade of IEEE. The NY Monitor requested all of them to send in their professional accomplishments and interests so as to set examples and role models for our younger members. Before we tell their personal stories a few words about the IEEE Fellow grade may not be out of place here. In 1963, the American Institute of Electrical Engineers (AIEE) merged with the Institute of Radio Engineers (IRE) that led to the incorporation of the IEEE we know today. In the same year, keeping with the AIEE's tradition the Board of Director of IEEE also decided to institute the Fellow grade for its membership.

"As it stands today, the IEEE Grade of Fellow is conferred by the Board of Directors upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interest. The total number selected in any one year does not exceed one-tenth of one percent of the total voting Institute membership. Each new Fellow receives a beautifully matted and framed certificate with the name of the Fellow and a brief citation describing the accomplishment, a congratulatory letter from the incoming IEEE president and a gold sterling silver Fellow lapel pin with antique finish." (Copied from ieee.org Web site)

At the 2017 ADD, as a Life Fellow of the IEEE, I had the privilege of presenting this year's Fellows to our colleagues and peers. I say; Thank you all for giving me this honor. After the ADD event I asked all of the new Fellows if they would write a few lines about their accomplishments so that the younger generation will be encouraged to follow their examples. Below you will find what the new Fellows have to say in their own words (unedited). (Their names appear in the alphabetical order of their first names.)

**Dr. Aleksandra (Saška) Mojsilović** — IBM T J Watson Research Center, Yorktown Heights, NY

IEEE citation: "For contributions to signal processing for image analysis, data mining, and business analytics"

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Aleksandra (Saška) Mojsilović is an IBM Fellow and scientist at the IBM T. J. Watson Research Center, Yorktown Heights, New York. She received the Ph.D. degree in electrical engineering from the University of Belgrade, Belgrade, Serbia in 1997. She was a Member of Technical Staff at the Bell Laboratories, Murray Hill, New Jersey (1998-2000), and then joined IBM Research, where she currently manages Data Science department. Saška is a founder and co-director of the IBM Science for Social Good program. Over the last 20 years, Saška has applied her skills to problems in computer vision, healthcare, multimedia, finance, HR, public affairs and economics. Saška is one of the pioneers of business analytics at IBM and in the industry; throughout her career she championed innovative uses of analytics for business decision support. For her technical contributions and the business impact of her work Saška was appointed an IBM Fellow, the company's highest technical honor. Saška is the author of over 100 publications and holds 16 patents. Her work has been recognized with several awards including IEEE Signal Processing Society Young Author Best Paper Award, INFORMS Wagner Prize, IBM Extraordinary Accomplishment Award, IBM Gerstner Prize, and Best Paper awards at ECCV and SOLI conferences. She is an IEEE Fellow and a member of INFORMS and SWE.

**Dr. Alper Buyuktosunoglu** – IBM T.J. Watson Research Center, Yorktown Heights, NY

IEEE Fellow citation: "For contributions to adaptive micro-architectures and robust power management"

Alper Buyuktosunoglu received PhD degree in electrical and computer engineering from University of Rochester. Currently, he is a Research Staff Member in Reliability and Power-Aware Microarchitecture department at IBM T. J. Watson Research Center. He has been involved in research and development work in support of IBM Power Systems and IBM z Systems in the area of high performance, reliability and power-aware computer architectures. He has over 100 pending/issued patents, has received several IBM-internal awards, has published over 85 papers, and has served on various conference technical program committees in this area. He is currently serving on the editorial board of IEEE

MICRO. Dr. Buyuktosunoglu is an IBM Master Inventor and an IEEE Fellow.

**Dr. Bhuvana Ramabhadran** – IBM T J Watson Research Center, Yorktown Heights, NY

IEEE citation: "For contributions to speech recognition and language processing"


No other detail was available to NY Monitor – Ed.

**Dr. Julia Hirschberg** – Columbia University, New York, NY

IEEE citation: "For contributions to text-to-speech synthesis and spoken language understanding"

Julia Hirschberg is Percy K. and Vida L. W. Hudson Professor and Chair of Computer Science at Columbia University. She previously worked at Bell Laboratories and AT&T Labs where she created the HCI Research Department. She served on the Association for Computational Linguistics executive board (1993-2003), the International Speech Communication Association board (1999-2007; 2005-7 as president), and the International Conference on Spoken Language Processing board since 1996. She has been editor of *Computational Linguistics* and *Speech Communication*, is a fellow of AAAI, ISCA, ACL, ACM, IEEE, and a member of the National Academy of Engineering. She has received the IEEE James L. Flanagan Speech and Audio Processing Award and the ISCA Medal for Scientific Achievement. She currently the serves on the IEEE Speech and Language Processing Technical Committee, is co-chair of CRA-W Board, and has worked for diversity for many years at AT&T and Columbia.

Hirschberg was one of the first to combine Natural Language Processing approaches to discourse and dialogue with speech processing and is a recognized leader in bringing these communities together. Her research focuses on identifying the role of prosodic information in speech and using this knowledge (a) to produce more realistic Text-to-Speech Synthesis (TTS) systems and to detect many types of **speaker state**: the classic emotions (anger, disgust, fear, happiness, sadness, and surprise); derived emotions such as confidence and uncertainty, deception, and charisma; and (b) to model human-human conversation in Spoken Dialogue Systems (SDS).

At Bell Labs, she worked on the Bell Labs TTS system as the designer and implementer of methods for assigning natural prosody from

unrestricted text for the Bell Labs TTS System in multiple languages. Her work was the first to apply statistical techniques for prosody assignment in a state-of-the-art TTS system. She applied machine learning algorithms to speech corpora manually labeled for prosodic elements; the resulting model was used to assign phrasing and prominence to unrestricted input text – this in an era where statistical methods were only beginning to challenge rule-based approaches. Her work served as a model for prosody modeling in many later TTS systems, including those of AT&T, IBM, and the Festival system. She was also a leader in the workshops which devised the most widely used model for intonational description, the ToBI (Tones and Break Indices) conventions; this annotation standard is used today for most major American, European, and Asian languages. She was a key developer of a theoretical model of intonational meaning based on the ToBI system which is still quite influential today.

Since moving to Columbia, Hirschberg has made major contributions to the automatic identification of ***emotional speech*** (confidence, uncertainty, and the classic emotions of anger, joy, surprise, sadness, disgust, and fear), improving over previous work by using higher level prosodic information as well as low level features derived from pitch, speaking rate, and energy. She has also done numerous studies of cross-cultural perception of ***charismatic speech***, identifying important similarities and differences in the prosodic factors correlated with perception of charisma by American English, Palestinian Arabic, and Swedish listeners. Hirschberg's work on ***deceptive speech*** produced the first cleanly-recorded corpus of deceptive and non-deceptive speech and the best results to date on the automatic identification of deception from prosodic and lexical cues, with results significantly out-performing those of human judges. Her current work on deception detection across cultures compares the cues to deception between native speakers of English and Chinese in a corpus of +100 hours of recordings.

Hirschberg's work on SDS has been based largely on prosodic analysis of the Columbia Games Corpus which she and her students collected, focusing on (1) the identification of ***turn-taking behaviors***; (2) the detection of ***human corrections, 'inappropriate' sytem responses,*** and likely ***ASR errors***, and (3) the role of prosodic ***entrainment*** (the propensity of conversational partners to begin behaving like each other, thus appearing more likeable, intelligent, and knowledgeable). Research on (1) has shown that prosodic cues are a reliable cue to determining that speakers are preparing to give up their turn and that backchannels (e.g. *ok, yeah*) can be distinguished from actual turn-taking behaviors in terms of their prosody. These findings are critical for the development of SDS which anticipate turn-endings via prosodic cues, rather than waiting for long pauses to occur, thus speeding up the dialogue, and for SDS that do not interpret backchannel indications of continued attention as attempts to take the turn. Work on (2) has provided evidence of new prosodic features that can be used to identify speaker attempts at correcting the system, system clarification questions that a system has asked incorrectly, and speaker input that is more likely to be misrecognized – all of importance to improving system performance. Studies of (3) have provided

evidence not only that prosodic entrainment is ubiquitous, with major similarities across several different cultures (American, Chinese, Slovakian and Argentine), but that SDS that entrain to their users can be implemented to operate in real time and are preferred by their users. This work has sparked numerous new research efforts internationally on prosodic entrainment in other languages and on the possibilities of creating avatars and robots that can engender trust by entraining to their human partners. All these research projects are linked by Hirschberg's ongoing efforts to understand the full range of contributions prosodic information makes to human-machine communication.

**Dr. Luca Carloni** – Columbia University
IEEE Fellow citation: "For contributions to system on-chip design automation and latency-insensitive design"

Luca Carloni is Professor of Computer Science at Columbia University in the City of New York, where he leads the System-Level Design Group. He holds a Laurea Degree *Summa cum Laude* in Electronics Engineering from the University of Bologna, Italy, a Master of Science in Engineering from the University of California at Berkeley, and a Ph.D. in Electrical Engineering and Computer Sciences from the University of California at Berkeley.

At Berkeley Luca was the 2002 recipient of the Demetri Angelakos Memorial Achievement Award in recognition of altruistic attitude towards fellow graduate students. Luca received the Faculty Early Career Development (CAREER) Award from the National Science Foundation in 2006, was selected as an Alfred P. Sloan Research Fellow in 2008, received the ONR Young Investigator Award in 2010 and the IEEE CEDA Early Career Award in 2012.

His research interests include methodologies and tools for multi-core system-on-chip platforms with emphasis on system-level design and communication synthesis, design and optimization of networks-on-chip, embedded software and distributed embedded systems. Luca coauthored over one hundred refereed papers and is the holder of two patents. He received the best paper award at DATE'12 for the paper "Compositional System-Level Design Exploration with Planning of High-Level Synthesis" and at CloudCom'12 for the paper "A Broadband Embedded Computing System for MapReduce Utilizing Hadoop." His ICCAD'99 paper "A Methodology for Correct-by-Construction Latency-Insensitive Design was selected for The Best of ICCAD, a collection of the best papers published at the IEEE International Conference on Computer-Aided Design from 1982 to 2002.

Luca is currently an associate editor of the IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems. From 2006 to 2013 he has served as associate editor of the ACM Transactions in Embedded Computing Systems. He has served on the technical program committee of several conferences including DAC, DATE, ICCAD, and EMSOFT. In 2010 he served as technical program co-chair of the International Conference on Embedded Software (EMSOFT), the International Symposium on Networks-on-Chip (NOCS), and the International Conference on Formal Methods and Models for Codesign (MEMOCODE). He served as vice general chair (in 2012) and general chair (in 2013) of Embedded Systems Week (ESWeek), the premier event covering all aspects of embedded systems and software.

Luca was the co-leader of the Platform Architectures theme in the Gigascale Systems Research Center (GSRC) and participates in the Center for Future Architectures Research (C-FAR).

Luca is a member of the Data Science Institute (DSI).

**Dr. Yong Liu** – New York University, New York. NY

IEEE citation: "For contributions to multimedia networking"

Yong Liu is an associate professor at the Electrical and Computer Engineering department of the Tandon School of Engineering of New York University (NYU). He joined NYU as an assistant professor in March 2005. He received his Ph.D. degree from Electrical and Computer Engineering department at the University of Massachusetts, Amherst, in May 2002. He received his master and bachelor degrees in the field of automatic control from the University of Science and Technology of China, in July 1997 and 1994 respectively. His general research interests lie in modeling, design and analysis of networked systems. His current research directions include Software-defined network, next generation mobile networking and applications, network measurement and data analytics, online social networks, and recommender systems. He is a Fellow of IEEE and member of ACM. He served as an associate editor for IEEE/ACM Transactions on Networking, and Elsevier Computer Networks Journal from 2012 to 2016. He was the general chair of Passive and Active Measurement Conference 2015 and IEEE Peer-to-Peer Computing 2015. With co-authors, he has published more than 100 papers in top journals and conferences. He was the winner of the Best Paper Award of ACM/USENIX Internet Measurement Conference (IMC) 2012, the National Science Foundation Career Award in 2010, the Best Paper Award of IEEE Conference on Computer

Communications (INFOCOM) in 2009, and the IEEE Communication Society Multimedia Communications Best Paper Award in 2008. More information about him is available at: http://eeweb.poly.edu/faculty/yongliu/

Multimedia applications - including Voice-over-IP, live and on-demand video streaming, video conferencing, and online gaming - are killer applications in the Internet. As one of the leading researchers in multimedia networking, Yong Liu has made fundamental contributions with lasting impact to the measurement, modeling, analysis and design of multimedia networking systems. Multimedia applications dominate Internet traffic. Their design choices not only determine the Quality of Experience (QoE) delivered to the user, but also crucially impact the performance and stability of the global Internet. Most commercial multimedia applications use proprietary protocols and encrypt their data and signaling. There is very limited public information about their design choices and QoE delivered to users. Yong's measurement work on contemporary multimedia networking systems has filled this knowledge gap, providing valuable insights into system architecture, design, performance, and network impact. Yong won the Best Paper Award in ACM/USENIX Internet Measurement Conference in 2012 for measurement study of video conferencing systems, including Google Plus Hangout, iChat/Facetime and Skype. Their work was also nominated for the 2013 Applied Networking Research Prize (ANRP) of the Internet Research Task Force (IRTF) and the Internet Society (ISOC). Leveraging on measurement study, Yong's team collaborated closely with Tencent WeChat (the No.1 online social network platform in China) in 2014 and 2015. They proposed novel realtime bandwidth estimation and video adaptation algorithms, which were adopted by the WeChat video call app in 2015 and have significantly improved video call QoE of WeChat's 650 million monthly active users world-wide.

Peer-to-Peer (P2P) technology leverages networking, computation and storage resources available on end systems to deliver a wide range of scalable network services. P2P has become a core component in many of today's Internet applications. Since 2005, Yong has done seminal work on modeling, analysis, design and experimentation of P2P video streaming systems. Yong analytically investigated various performance bounds of P2P streaming: what is the maximum supportable streaming rate and peer population in a P2P video streaming system? What is the minimum delay that can be achieved in P2P streaming? What are the performance limitations of P2P video systems offering multiple channels? Yong's paper on analysis of multi-channel P2P IPTV received the Best Paper Award of IEEE Conference on Computer and Communications (INFOCOM) 2009. Working with industrial sponsors, Yong has developed new streaming architectures and chunk scheduling algorithms. In addition to papers and prototypes, Yong has been granted several US and international patents for his innovations in P2P streaming.

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**NEW YORK SECTION**

**You are invited to a meeting of the PES & IAS NY Chapter and the NY LMAG on:**

## Intelligent Submersible Pumping Systems w/Integrated Controls

## Tuesday, August 29th, 2017

**THE PRESENTATION:**

This presentation will attempt to answer the following questions:

- How does intelligent submersible pumping work?
- How do you minimize control space requirements?
- What are the benefits to submersible integrated controls?
- How do integrated controls maximize efficiency?

**THE SPEAKER:** **Jamie Saxe co-preenting with Peter Pastore, G.A. Fleet Associates**

Jamie Saxe is currently a Municipal Market Manager for G.A. Fleet Associates. She currently manages Municipal Market Group which supports the NYC Metro area, Central/Northern NJ and Connecticut. Jamie leads business development for Capital Projects and market strategy for the NYC Metro area and has previously led the Hurricane Sandy relief efforts for the Fleet Municipal group with specific design interaction, leadership response and project implementation with the NYCDEP, Nassau County, Port Authority, New York Transit Authority, Westchester County, and others. Jamie's expertise includes engineered advanced pumping and control technology systems and SCADA network and communications.

Jamie was a representative and committee member of the Submersible Wastewater Pumping Association (SWPA). Jamie has also participated as a keynote speaker at the following association seminars: LI NYWEA Chapter seminars, NC Wastewater Association, NJWEA Technology conference, LA Rural Water, AL Rural water. Jamie's involvement in leading CEU (and CEU equivalent) courses on pumping system controls, SCADA system design and total solution control systems still continues.

**ALL ARE INVITED – PLEASE POST**

RSVP:https://meetings.vtools.ieee.org/meeting_registration/register/46600
**Chair Programs: Arnold Wong**
wongar@coned.com or (212) 460-4189
**Chair Technical Committee: Sukumar Alampur**

**FOR SECURITY REASONS: NO WALK-INS!**

**When:** 5:00 pm - Starts-Refreshments & Program

7:00 pm — Program Ends

**Where:**
Con Edison
The Annex
4 Irving Place, New York, NY 10003
Nearest Subway: 14th St/Union Sq.

**This program will be awarded IEEE Continuing Education Units.**

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## 23 – 24 September 2017

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***(Two shifts give you a Weekend pass to the Faire!)***

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***Sponsored by Region 1, IEEE-USA, EAB and IET***

***Volunteer! - contact Charles Rubenstein***
***<c.rubenstein@ieee.org>***



Revision 0