The 2019 EITA New Media and New Digital Ventures Workshop

(EITA-New Media and New Digital Ventures 2019)

"The Rise of the New Digital Economy: Trends, Opportunities and Challenges"

Conference Proceedings

Taipei Economic and Cultural Office in New York
1 East 42nd Street, New York, NY 10017

Friday, May 3, 2019

<Final>

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<u>Conference Themes</u>

The Rise of the New Digital Economy: Trends, Opportunities and Challenges"

The EITA-New Media and New Digital Ventures 2019 consists of five plenary sessions:

- **Plenary Session 1:** Nanoelectronics, Photonics, Electronic Smart Systems, Flexible and Wearble Electronics, and Emerging IC Packaging Platform for ICT Systems
- **Plenary Session 2:** 5G Mobile Wireless Technology, Fog Computing and Internet of Things (IoT), Next Generation Internet (NGI), Smart City Technologies, Biometric and Cybersecurity
- **Plenary Session 3:** Emerging Technologies and Applications in Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision and Graphics, and Sustainable Smart Manufacturing
- **Plenary Session 4:** Building the Digital Platforms of the Future
- **Panel Discussion: Plenary Session 5:** Computing and Data Infrastructure: High-Performance and High-Throughput Computing, Quantum Computing and Communications, Big Data and Intelligence, Cloud Technologies, and Advanced Software Engineering

Planning Committee

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Shu-Jen Han	(漢述仁)	HFC Semiconductor Corp.

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Shu-Jen Han   (漢述仁)   HFC Semiconductor Corp.

Plenary Session 2 (P2):

Yew-Huey Liu   (劉玉慧)   IBM T.J. Watson Research Center

Plenary Session 3 (P3):

Pei-Cheng Ku   (古培正)   University of Michigan at Ann Arbor

Plenary Session 4 (P4):

Pei-yun S. (Sabrina) Hsueh   (薛沛芸)   IBM Thomas J. Watson Research Center

Plenary Session 5 (P5): Panel Discussion:

Yew-Huey Liu   (劉玉慧)   IBM T.J. Watson Research Center

Publication

Conference Program:

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Local Management, General Inquiries & Pre-registration

Investment & Trade Office, Taipei Economic and Cultural Representative Office in the U.S.
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On-Site Registration

Investment & Trade Office, Taipei Economic and Cultural Representative Office in the U.S.
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Investment & Trade Office, Taipei Economic & Cultural Representative Office in the U.S.
(駐美投資貿易服務處)

Conference Program

5/3 (Fri) 1:00 pm - 5:00 pm: Registration
Room: the 1st FL., TECO in New York

5/3 (Fri) 1:30 pm - 1:50 pm: Opening Session
Co-Chairs:

Dr. Rong N. Chang (張榮)
Member of IBM Academy of Technology (AoT)
IBM T.J. Watson Research Center

Dr. Shu-Jen Han (漢述仁)
Director, Advanced Memory Technology
HFC Semiconductor Corp.
Room: Main Auditorium, TECO in New York

Welcome Remarks:

Ambassador Lily L.W. Hsu
Director General
The Taipei Economic and Cultural Office in New York
(中華民國駐紐約臺北經濟文化辦事處處長徐儷文大使)

Plenary Sessions:
5/3 (Fri) 1:50 pm - 2:40 pm: Plenary Session (I): Nanoelectronics, Photonics, Electronic Smart Systems, Flexible and Wearble Electronics, and Emerging IC Packaging Platform for ICT Systems

Chair: Dr. Shu-Jen Han (漢述仁), Director, Advanced Memory Technology, HFC Semiconductor Corp.
Room: Main Auditorium, TECO in New York

"How GaN Semiconductor May Help Reshape the Future of Digital Economy"
Dr. Pei-Cheng Ku (古培正)
Associate Professor, Department of Electrical Engineering and Computer Science
The University of Michigan at Ann Arbor

Dr. Shu-Jen Han (漢述仁)
Director, Advanced Memory Technology
HFC Semiconductor Corp.

5/3 (Fri) 2:40 pm – 3:30 pm: Plenary Session (II): 5G Mobile Wireless Technology, Fog Computing and Internet of Things (IoT), Next Generation Internet (NGI), Smart City Technologies, Biometric and Cybersecurity

Chair: Dr. Yew-Huey Liu (劉玉慧) , Computer Scientist, Computing as a Service: Services and API Ecosystems, IBM T.J. Watson Research Center
Room: Main Auditorium, TECO in New York

Dr. Zhongshu Gu (顧鍾蔬)

Research Staff Member
IBM T.J. Watson Research Center

Dr. Linsong Chu (初琳淞)

IBM T.J. Watson Research Center

5/3 (Fri) 3:30 pm - 3:40 pm: Break

5/3 (Fri) 3:40 pm – 4:05 pm: Plenary Session (III): Emerging Technologies and Applications in Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision and Graphics, and Sustainable Smart Manufacturing

Chair: Dr. Pei-Cheng Ku (古培正)**,** Associate Professor, Department of Electrical Engineering and Computer Science, The University of Michigan at Ann Arbor
Room: Main Auditorium, TECO in New York

"From Real-World Evidence to Person-Centered Healthcare"

Dr. Pei-yun S. (Sabrina) Hsueh (薛沛芸)

Member of IBM Academy of Technology
IBM T.J. Watson Research Center

5/3 (Fri) 4:05 pm – 4:55 pm: Plenary Session (IV): Building the Digital Platforms of the Future

Chair: Dr. Pei-yun S. (Sabrina) Hsueh (薛沛芸), Member of IBM Academy of Technology, Thomas J. Watson Research Center
Room: Main Auditorium, TECO in New York

"Building a Digital Platform for Mobile Health"

Dr. Chen-Hsiang (Jones) Yu (余禎祥)

Associate Professor, Department of Computer Science and Networking
Wentworth Institute of Technology and
Beth Israel Deaconess Medical Center, Harvard Medical School

Mr. Bernard Lin (林柏臻)

Chief Alchemist, Rebloc

5/3 (Fri) 4:55 pm – 5:55 pm: Panel Discussion & Plenary Session (V): Computing and Data Infrastructure: High-Performance and High-Throughput Computing, Quantum Computing and Communications, Big Data and Intelligence, Cloud Technologies, and Advanced Software Engineering

Chair & Moderator: Dr. Yew-Huey Liu (劉玉慧) , Computer Scientist, Computing as a Service: Services and API Ecosystems, IBM T.J. Watson Research Center
Room: Main Auditorium, TECO in New York

Dr. Jeng-Bang Yau (姚正邦)
Research Staff Member - Experimental Quantum Computing
IBM T.J. Watson Research Center

"The Power of Kubernetes in DevOps Adoption"
Dr. Yew-Huey Liu (劉玉慧)
Computer Scientist, Computing as a Service: Services and API Ecosystems
IBM T.J. Watson Research Center

5/3 (Fri) 5:55 pm – 6:00 pm: Closing Remarks:
Chairs:
Dr. Rong N. Chang (張榮)
Member of IBM Academy of Technology (AoT)
IBM T.J. Watson Research Center

Dr. Shu-Jen Han (漢述仁)
Director, Advanced Memory Technology
HFC Semiconductor Corp.
Room: Main Auditorium, TECO in New York

Abstracts and Biographies

Day 1 (Friday, May 3, 2019)

Opening Session

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Conference Co-Chair

Rong N. Chang (張榮)

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BIOGRAPHY

Dr. Rong N. Chang is Member of IBM Academy of Technology at the IBM T.J. Watson Research Center. He is leading an in-market R&D effort in creating a hybrid multicloud based open financial API services platform. He received his Ph.D. degree in computer science & engineering from the University of Michigan in USA in 1990 and his B.S. degree in computer engineering with honors from the National Chiao Tung University in Taiwan in 1982.

Before joining IBM in 1993, he was with Bellcore researching on B-ISDN based personal ubiquitous application services. He has won one IEEE Best Paper Award, received six IBM corporate-level Outstanding Technical Achievement Awards, held 30+ patents, and published 50+ refereed technical papers in the areas of in the areas of Internet-enabled distributed services computing, enterprise clouds, and service level agreement (SLA) management optimization.

Dr. Chang is Chair of IEEE Technical Committee on Services Computing, Distinguished Member of ACM, and National Council Member of Chinese Institute of Engineers, USA. He is Associate Editor-in-Chief of the IEEE Transactions on Services Computing and has served as a guest editor for the IEEE Transactions on Services Computing, IEEE Internet of Things Journal, and CIC/IEEE China Communications. He has chaired many conferences on Internet-based distributed services & solutions. He is Steering Committee Member of ACM/IEEE Symposium of Edge Computing, IEEE World Congress on Services, and IEEE Cloud Computing for Emerging Markets. He is General Chair of 2019 IEEE International Conference on Cognitive Computing and Co-Chair of 2019 IEEE SERVICES Symposia. He has an ITIL Foundation certificate in IT Services Management and a Micro MBA certificate.

Opening Session

Conference Co-Chair

Shu-Jen Han (漢述仁)

Director, Advanced Memory Technology
HFC Semiconductor Corp.

BIOGRAPHY

Shu-Jen Han is a Director of Advanced Memory Technology at HFC Semiconductor Corp. where he oversees overall MRAM technology research and development in the company. Before he took this role in 2017, he was a manager of Nanoscale Device and Technology group at the IBM T. J. Watson Research Center. He holds a Ph.D. in Materials Sci. & Eng. and Ph.D. minor in Electric Eng. from Stanford University (2007), and a B.S. from National Tsing-Hua University, Taiwan (1999). Before joining IBM Research in 2009, he worked at IBM Semiconductor RD Center and developed 45 nm and 32 nm SOI logic technologies. He has over 90 technical publications, including multiple publications in Science and Nature series and two book chapters, and over 140 issued US patents. His works have been reported in CNET, BBC, MIT Technology Review, New York Times, Washington Post, and Wall Street Journal etc. He has received three IBM Outstanding Technical Achievement Awards and appointed as IBM Master Inventor twice for his contributions to the nanoelectronics field.

Opening Session

Welcome Remarks

Ambassador Lily L.W. Hsu

Director General
The Taipei Economic and Cultural Office in New York
(中華民國駐紐約臺北經濟文化辦事處處長徐儷文大使)

BIOGRAPHY

Personal

- Born in 1962
- Married, husband: Kuo-Yu TUNG

Education

- BA, Political Science, National Taiwan University, Taiwan, ROC
- Visiting Scholar, Sigur Center of Asian Studies, George Washington University, USA, 2009

Professional Career

- 1986-1987 Desk Officer, Department of Information & Cultural Affairs, Ministry of Foreign Affairs (MOFA)
- 1987-1989 Desk Officer, Department of International Organizations, MOFA
- 1990-1995 Third and Second Secretary, Taipei Economic and Cultural Representative Office in the U.S.A.(Washington, D.C.)
- 1995-1997 Section Chief, Department of International Organizations, MOFA
- 1997-1999 Section Chief, Department of European Affairs, MOFA
- 1999-2001 Assistant Director General, Department of Information & Cultural Affairs, MOFA
- 2001-2005 Director, Administrative Division, Taipei Representative Office in the U.K.
- 2007-2010 Deputy Director General, Department of International Organizations, MOFA

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- 2010-2012 Director General, Department of International Organizations, MOFA, and concurrently Senior Official of Chinese Taipei in APEC
- 2012-2015 Representative (Ambassador), Taipei Representative Office in Denmark
- 2016- Director General (ambassadorial rank), Taipei Economic and Cultural Office in New York
  Head of UN Affairs Task Force in New York

Plenary Session (I)

Session Chair

Shu-Jen Han (漢述仁)

Director, Advanced Memory Technology
HFC Semiconductor Corp.

BIOGRAPHY

Shu-Jen Han is a Director of Advanced Memory Technology at HFC Semiconductor Corp. where he oversees overall MRAM technology research and development in the company. Before he took this role in 2017, he was a manager of Nanoscale Device and Technology group at the IBM T. J. Watson Research Center. He holds a Ph.D. in Materials Sci. & Eng. and Ph.D. minor in Electric Eng. from Stanford University (2007), and a B.S. from National Tsing-Hua University, Taiwan (1999). Before joining IBM Research in 2009, he worked at IBM Semiconductor RD Center and developed 45 nm and 32 nm SOI logic technologies. He has over 90 technical publications, including multiple publications in Science and Nature series and two book chapters, and over 140 issued US patents. His works have been reported in CNET, BBC, MIT Technology Review, New York Times, Washington Post, and Wall Street Journal etc. He has received three IBM Outstanding Technical Achievement Awards and appointed as IBM Master Inventor twice for his contributions to the nanoelectronics field.

Plenary Session (1)

How GaN Semiconductor May Help Reshape the Future of Digital Economy

Plenary Speaker

Pei-Cheng Ku (古培正)

Associate Professor, Department of Electrical Engineering & Computer Science
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ABSTRACT

The future of digital economy not only hinges upon the advancements of a variety of software tools but also can greatly benefit from new capabilities enabled by novel semiconductor technologies. In this talk, I will discuss a few novel applications of gallium nitride semiconductors, arguably the second most important semiconductors in the 21st century besides silicon, in the era of digital economy.

BIOGRAPHY

P.C. Ku received all his degrees in electrical engineering including a BS from the National Taiwan University and a PhD from the University of California at Berkeley. He was awarded the Ross Tucker Memorial Award in 2004 as a result of his PhD research. He was with Intel from 2004 to 2005 before joining the University of Michigan in 2006 where he is currently an associate professor of electrical engineering and computer science. In 2010, he cofounded Arborlight that is dedicated to solid-state lighting system design and application. He received the DARPA Young Faculty Award in 2010.

Plenary Session (1)

Plenary Speaker

Shu-Jen Han (漢述仁)

Director, Advanced Memory Technology
HFC Semiconductor Corp.

ABSTRACT

We have witnessed a tremendous information technology revolution originated from the relentless scaling of Si CMOS devices. The conventional homogeneous scaling of silicon devices has become very difficult. Carbon nanotubes (CNTs) are promising to replace silicon as the channel material for high-performance electronics near the end of silicon scaling roadmap, with their superb electrical properties, intrinsic ultrathin body, and nearly transparent contact with certain metals. In this talk, I will cover recent CNT progress for extending logic roadmap as well as few examples for beyond logic applications, such as physical unclonable function and mid-IR to THz detection utilizing unique properties from CNTs.

BIOGRAPHY

Shu-Jen Han is a Director of Advanced Memory Technology at HFC Semiconductor Corp. where he oversees overall MRAM technology research and development in the company. Before he took this role in 2017, he was a manager of Nanoscale Device and Technology group at the IBM T. J. Watson Research Center. He holds a Ph.D. in Materials Sci. & Eng. and Ph.D. minor in Electric Eng. from Stanford University (2007), and a B.S. from National Tsing-Hua University, Taiwan (1999). Before joining IBM Research in 2009, he worked at IBM Semiconductor RD Center and developed 45 nm and 32 nm SOI logic technologies. He has over 90 technical publications, including multiple publications in Science and Nature series and two book chapters, and over 140 issued US patents. His works have been reported in CNET, BBC, MIT Technology Review, New York Times, Washington Post, and Wall Street Journal etc. He has received three IBM Outstanding Technical Achievement Awards and appointed as IBM Master Inventor twice for his contributions to the nanoelectronics field.
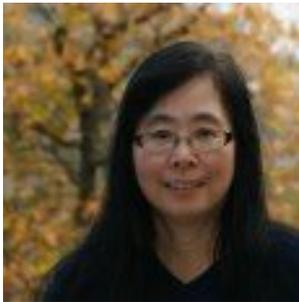
Plenary Session (II)

Session Chair

Yew-Huey Liu (劉玉慧)

Computer Scientist, IBM T. J. Watson Research Center
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BIOGRAPHY

Dr. Liu is a computer scientist at IBM T. J. Watson Research Center. She is currently working on the Cloud Native Programming Paradigm. Cloud Native is an approach to building and running applications that exploits the advantage of the cloud computing delivery model. The major challenges in this space is how to exploit the auto-scaling and auto-provisioning features provided by cloud environment, and integration with various cloud vendors.

Her past work includes the Papillon Project, a platform which unlocks access to API systems and data, and provided an integrated platform for subscription, billing, IBM id and API management. Prior to Papillon project , she is the architect and Cloud Service Management workstream lead for the IBM Smart Cloud Enterprise Plus. Dr. Liu joined IBM in 1989 as Unix Kernel Developer. She received her Ph.D. from Michigan state university in 1995 under IBM Graduate Work Study Program. Her accomplishments at IBM include one IEEE Best Paper Award and many IBM awards, including two corporate-level Outstanding Technical Achievement Awards and three division-level Accomplishment Awards. Dr. Liu has done extensive research in the area of Unix Kernel, Parallel Database, scalable Web service framework and had published more than 40 papers and patents. Her current research is in the area of business as-a-service, Data Center Transformation, Cloud Services Management, and Cloud Native Programming Paradigm.

Plenary Session (II)

Plenary Speaker

Zhongshu Gu (顧鍾蔬)

Research Staff Member, IBM Research
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ABSTRACT

In this talk, I will focus on some important research problems emerged recently on AI security. To be more specific, I will discuss cyber-attacks around adversarial examples, model poisoning, and training data reconstruction.

In addition, my talk will also cover the security and privacy challenges for deploying and training deep learning models in the public cloud and present our solutions to address these challenges.

BIOGRAPHY
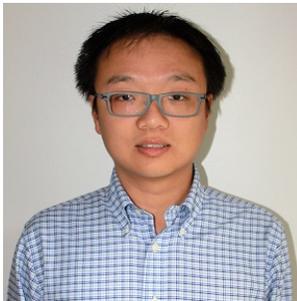
Zhongshu Gu is a Research Staff Member in the Security Research Department of the IBM T.J. Watson Research Center. He received his Ph.D. from Purdue University in 2015 and B.S. from Fudan University in 2007, both in Computer Science. His research interests are in the areas of systems security, AI security, security analytics, and cyber forensics.

Plenary Session (III)

Session Chair

Pei-Cheng Ku (古培正)

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BIOGRAPHY

P.C. Ku received all his degrees in electrical engineering including a BS from the National Taiwan University and a PhD from the University of California at Berkeley. He was awarded the Ross Tucker Memorial Award in 2004 as a result of his PhD research. He was with Intel from 2004 to 2005 before joining the University of Michigan in 2006 where he is currently an associate professor of electrical engineering and computer science. In 2010, he cofounded Arborlight that is dedicated to solid-state lighting system design and application. He received the DARPA Young Faculty Award in 2010.

Plenary Session (III)

From Real-World Evidence to Person-Centered Healthcare

Plenary Speaker

Pei-Yun Sabrina Hsueh (薛沛芸)

Member of IBM Academy of Technology & Research Staff Member, IBM
1101 Kitchawan Road, Yorktown Heights, NY 10598, USA
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ABSTRACT

Patient-centric care has been one of the quadruple aims of healthcare in modern medicine. How to do this while maintaining the operational efficiency for value-based care is the billion-dollar question. To achieve this, recent studies documented the importance of accounting for individuality and heterogeneity through precision health applications. In practice, while precision health applications can be effective at times, our knowledge about how to engage patients us limited due to a lack of systematic analysis of health delivery data. Meanwhile, the recent rise of consumer awareness and the prevalence of e-health technologies (e.g., mobiles, sensors, wearables) have further enabled data curation on personal health status along with its context for interpretation. However, today's care programs are not structured to generate real-world evidence directly from patient-level understanding. What if healthcare professionals can take advantage of the revealed behavioral patterns and responses to further engage target patients and personalize their care plans? Can we start generating real-world evidence from the personal health data to provide hyper-personalization insights of best practice at the individual level by using technology to scale human touch in the careflow?

Despite the high potential, making individualized recommendations from personal health behavioral data incurs multi-level challenges. The goal of this talk is to review the efforts of developing an AI/cognitive learning framework that incorporates both data and knowledge-driven evidence to capture individual predictive care pathways. For example, we leveraged interpretable AI/ML approaches to induce policies for stage-based recommendations that can reduce a user's perceived stress over a given time horizon. As medical decisions are never black and white, our learning framework further helps incorporate patients' outcome-differential responses for personalized care planning. We will conclude with the challenges and opportunities we observed on the frontline of integrating data science and the science of care for patient-centric care.

BIOGRAPHY

Pei-Yun (Sabrina) Hsueh is currently the Member of IBM Academy of Technology at IBM T.J. Watson Research Center, leading the development of the real-world evidence generation behavioral health informatics framework that detects patient need in context from a wide range of heterogeneous patient health data sources, e.g., nutrition outcome registry, care management records, survey and self-reported outcomes, mobile app-enabled ecological momentary assessments, and wearable/IOT sensor data. She co-chairs the IBM

Health Informatics Professional Interest Community and has served on various scientific program committees in ACM, IEEE, AMIA and IMIA. She has been elected as the Chair of Consumer and Pervasive Health Informatics Work Group of American Medical Informatics Association (2018-2021). Her work has recently been awarded the AMIA 2018 Distinguished Paper Award.

Dr. Hsueh is a pioneer in the area of personal health informatics and, in particular, computational health behavior and decision science research. Her informatics interest ties closely to the marriage of science of care and science of data, aiming to bridge the gap between population-level evidence and individual patient need. Her expertise in the emerging area makes her a sought-after speaker and consultant in various science-driven industry solutions and innovation management.

She is a constant winner of IBM Inventor Plateau awards, Manager Choice Awards. Excellence and Eminence Award, and Research Achievement Awards. She authored 28 patents, 50+ technical papers, 3 textbook chapters, and is currently editing a new book on Machine Learning for Medicine and Healthcare (Springer Nature). She is also a guest editor of the Sensors Journal (special issue: Data Analytics and Applications of Wearable Sensors in Healthcare) and Journal of American Medical Informatics Association OPEN.

She received her B.S. from National Taiwan University, M.S. from University of California at Berkeley, and Ph.D. from University of Edinburgh respectively. Prior to IBM, she worked in the EU FP6 an FP7 Augmented Multiparty Interaction project with 22 partner sites across 7 countries and has been selected as an European Google Anita Borg Scholar.

Plenary Session (IV)

Session Chair

Pei-Yun Sabrina Hsueh (薛沛芸)

IBM Academy of Technology Member
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Email: pyhsueh@berkeley.edu

BIOGRAPHY

Pei-Yun (Sabrina) Hsueh is currently the Member of IBM Academy of Technology at IBM T.J. Watson Research Center, leading the development of the real-world evidence generation behavioral health informatics framework that detects patient need in context from a wide range of heterogeneous patient health data sources, e.g., nutrition outcome registry, care management records, survey and self-reported outcomes, mobile app-enabled ecological momentary assessments, and wearable/IOT sensor data. She co-chairs the IBM Health Informatics Professional Interest Community and has served on various scientific program committees in ACM, IEEE, AMIA and IMIA. She has been elected as the Chair of Consumer and Pervasive Health Informatics Work Group of American Medical Informatics Association (2018-2021). Her work has recently been awarded the AMIA 2018 Distinguished Paper Award.

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Plenary Session (IV)

Building a Digital Platform for Mobile Health

Plenary Speaker

Chen-Hsiang (Jones) Yu (余禎祥)

Associate Professor, Department of Computer Science and Networking
Wentworth Institute of Technology and
Beth Israel Deaconess Medical Center, Harvard Medical School
550 Huntington Ave, Boston, MA 02115-5998, USA
Email: yuj6@wit.edu

ABSTRACT

Since 2007, mobile applications have become popular and many software developers tried to design and create applications for different usages. The innovations are pervasive in different domains, such as education, entertainment, health, economy, etc. In terms of mobile engineering, an open-source electronics platform with a built-in microcontroller is also popular, such as Arduino and Raspberry Pi. When mobile application development meets open-source electronics platform, it opens a door for researchers to design, create and make a prototype system to verify primitive research ideas that might address real life issues. In this talk, I will share some of our work focusing on addressing issues in the health domain by using mobile application development, microcontroller with sensors and machine learning on mobile devices.

BIOGRAPHY

Chen-Hsiang (Jones) Yu is an Associate Professor of Computer Science and Networking at Wentworth Institute of Technology. He is also an affiliated faculty member at the Center for Dynamical Biomarkers, Beth Israel Deaconess Medical Center / Harvard Medical School, and the HCI Lab at Tufts University. He earned B.Eng. and M.S. in Computer Science and Information Engineering (CSIE) from Tamkang University (1998) and National Taiwan University (2000), and Ph.D. in Computer Science from MIT (2012) under Prof. Rob Miller's guidance. He has won Blittersdorf Faculty Award, Sagan Faculty Fund Grants Award, five Presidential EPIC Mini Grants Awards, ACM UIST Best Poster Award, ACM CHI Student Research Competition and several competitions, including MIT's First Mobile App Development competition, MIT $100K ESC competition, MIT iCampus Prize, etc. During his work in industry, he has joined to develop more than 12 commercialized mobile phones and several mobile applications. His research in HCI (Human-Computer Interaction) focuses on mobile health, AI on mobiles, web customization and automation, and readability enhancement.

Plenary Session (IV)

Plenary Speaker

Bernard Lin (林柏臻)

Chief Alchemist, Rebloc

ABSTRACT

Go over a list of the techno-economical and socio-institutional challenges to be solved and discuss how to make technology work for us.

BIOGRAPHY

Bernard Lin is currently responsible for the overall technology and strategy for building a decentralized real estate data market place at Rebloc.

Bernard's former roles include Chief Alchemist at Opencrowd, Account Principal at Contino, VP & Principal at Cloud Technology Partners, Principal at Silver Lake Technology, Head of Technology at B2X and Senior Director of Broadband Services at Sony shepherding digital transformation.

His industry experience spans across financial services, media & entertainment, B2B/B2C e-commerce, publishing and fashion with expertise in finance, economics, cloud computing, big data, machine learning, container and blockchain.
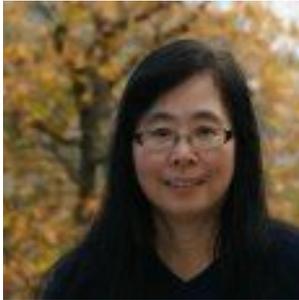
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Plenary Session (V) & Panel Discussions

Moderator & Session Chair

Yew-Huey Liu (劉玉慧)

Computer Scientist, IBM T. J. Watson Research Center
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<u>BIOGRAPHY</u>

Dr. Liu is a computer scientist at IBM T. J. Watson Research Center. She is currently working on the Cloud Native Programming Paradigm. Cloud Native is an approach to building and running applications that exploits the advantage of the cloud computing delivery model. The major challenges in this space is how to exploit the auto-scaling and auto-provisioning features provided by cloud environment, and integration with various cloud vendors.

Her past work includes the Papillon Project, a platform which unlocks access to API systems and data, and provided an integrated platform for subscription, billing, IBM id and API management. Prior to Papillon project , she is the architect and Cloud Service Management workstream lead for the IBM Smart Cloud Enterprise Plus. Dr. Liu joined IBM in 1989 as Unix Kernel Developer. She received her Ph.D. from Michigan state university in 1995 under IBM Graduate Work Study Program. Her accomplishments at IBM include one IEEE Best Paper Award and many IBM awards, including two corporate-level Outstanding Technical Achievement Awards and three division-level Accomplishment Awards. Dr. Liu has done extensive research in the area of Unix Kernel, Parallel Database, scalable Web service framework and had published more than 40 papers and patents. Her current research is in the area of business as-a-service, Data Center Transformation, Cloud Services Management, and Cloud Native Programming Paradigm.

Plenary Session (V) & Panel Discussions

Plenary Speaker & Panelist

Jeng-Bang Yau (姚正邦)

Research Staff Member - Experimental Quantum Computing
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ABSTRACT

Quantum computing, an emerging paradigm potentially for next generation computation, has received significant amount of attention over the past few years thanks to the advancements in both software and hardware. In May 2016, IBM launched IBM Q Experience that offered a first-ever real 5-qubit machine online. Since then, this initiative has had over 100,000 users worldwide, with software and applications created with Qiskit, an open source quantum computing software development framework. In this talk, I will give a brief overview of the progress of quantum computing and the introduction of IBM Q.

BIOGRAPHY

Dr. Jeng-Bang Yau is a Research Staff Member at the IBM T.J. Watson Research Center. He received his Ph.D. degree in electrical engineering from Princeton University in 2002 and his B.S. and M.S. degrees in electrical engineering from National Tsing Hua University in Taiwan in 1992 and 1994, respectively. Prior to joining IBM Research in 2006, he was a postdoctoral research associate in the Dept. of Applied Physics at Yale University.

He is recipient of corporate honors including IBM Inventor Plateau Award, Manager Choice Award, and Eminence and Excellence Award. He holds 70+ patents and published 20+ peer-reviewed technical papers. The research topic of his Ph.D thesis has been featured in the Research Highlights of Nature Physics Portal and in the Science's Compass column in Science magazine. He was in the Semiconductor Research upon joining IBM and achieved the demonstration of power-efficient SOI technology. His current focus is in the Experimental Quantum Computing Technology.

Dr. Yau is a member of IEEE and American Physical Society and have chaired in various conferences such as the IEEE SOI-3D-Subthreshold Microelectronics Technology Unified Conference. He is a regular referee of technical and scientific journals such as IEEE journals, Applied Physics Letters, Journal of Applied Physics, and Physical Reviews.

Plenary Session (V) & Panel Discussions

The Power of Kubernetes in DevOps Adoption

Plenary Speaker & Panelist
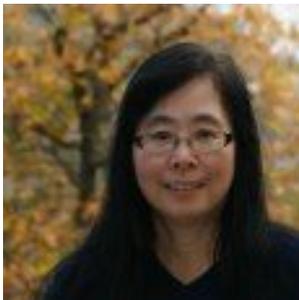
Yew-Huey Liu (劉玉慧)

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ABSTRACT

DevOps is a set of software development practices that automates the processes between software development and IT teams to shorten the software development cycle, such that they can build, test, and deploy application faster and more reliably. Kubernetes is the operating system of the cloud-native world, providing a reliable and scalable platform for running containerized workloads. Kubernetes cluster provides DevOps numerous advantages over other computing environments. Kubernetes, self-healing, fast container cluster management tool, guarantees developers and engineers faster performance, better redundancy, and excellent uptime.

In this talk, I will talk about What is DevOps, and introduce Container architecture, Kubernetes, and Cloud Native Programming Paradigm.

BIOGRAPHY

Dr. Liu is a computer scientist at IBM T. J. Watson Research Center. She is currently working on the Cloud Native Programming Paradigm. Cloud Native is an approach to building and running applications that exploits the advantage of the cloud computing delivery model. The major challenges in this space is how to exploit the auto-scaling and auto-provisioning features provided by cloud environment, and integration with various cloud vendors.

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Closing Remarks

Conference Co-Chair

Rong N. Chang (張榮)

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BIOGRAPHY

Dr. Rong N. Chang is Member of IBM Academy of Technology at the IBM T.J. Watson Research Center. He is leading an in-market R&D effort in creating a hybrid multicloud based open financial API services platform. He received his Ph.D. degree in computer science & engineering from the University of Michigan in USA in 1990 and his B.S. degree in computer engineering with honors from the National Chiao Tung University in Taiwan in 1982.

Before joining IBM in 1993, he was with Bellcore researching on B-ISDN based personal ubiquitous application services. He has won one IEEE Best Paper Award, received six IBM corporate-level Outstanding Technical Achievement Awards, held 30+ patents, and published 50+ refereed technical papers in the areas of in the areas of Internet-enabled distributed services computing, enterprise clouds, and service level agreement (SLA) management optimization.

Dr. Chang is Chair of IEEE Technical Committee on Services Computing, Distinguished Member of ACM, and National Council Member of Chinese Institute of Engineers, USA. He is Associate Editor-in-Chief of the IEEE Transactions on Services Computing and has served as a guest editor for the IEEE Transactions on Services Computing, IEEE Internet of Things Journal, and CIC/IEEE China Communications. He has chaired many conferences on Internet-based distributed services & solutions. He is Steering Committee Member of ACM/IEEE Symposium of Edge Computing, IEEE World Congress on Services, and IEEE Cloud Computing for Emerging Markets. He is General Chair of 2019 IEEE International Conference on Cognitive Computing and Co-Chair of 2019 IEEE SERVICES Symposia. He has an ITIL Foundation certificate in IT Services Management and a Micro MBA certificate.

Opening Session

Conference Co-Chair

Shu-Jen Han (漢述仁)

Director, Advanced Memory Technology
HFC Semiconductor Corp.

BIOGRAPHY

Shu-Jen Han is a Director of Advanced Memory Technology at HFC Semiconductor Corp. where he oversees overall MRAM technology research and development in the company. Before he took this role in 2017, he was a manager of Nanoscale Device and Technology group at the IBM T. J. Watson Research Center. He holds a Ph.D. in Materials Sci. & Eng. and Ph.D. minor in Electric Eng. from Stanford University (2007), and a B.S. from National Tsing-Hua University, Taiwan (1999). Before joining IBM Research in 2009, he worked at IBM Semiconductor RD Center and developed 45 nm and 32 nm SOI logic technologies. He has over 90 technical publications, including multiple publications in Science and Nature series and two book chapters, and over 140 issued US patents. His works have been reported in CNET, BBC, MIT Technology Review, New York Times, Washington Post, and Wall Street Journal etc. He has received three IBM Outstanding Technical Achievement Awards and appointed as IBM Master Inventor twice for his contributions to the nanoelectronics field.