KEYNOTE SPEAKER

OCTOBER 21 | MONDAY | 08:20-09:20

Prof. Keshab K. Parhi, IEEE Fellow, AAAS Fellow
University of Minnesota, USA

Bio: Keshab K. Parhi received the B.Tech. degree from the Indian Institute of Technology (IIT), Kharagpur, in 1982, the M.S.E.E. degree from the University of Pennsylvania, Philadelphia, in 1984, and the Ph.D. degree from the University of California, Berkeley, in 1988. He has been with the University of Minnesota, Minneapolis, since 1988, where he is currently Distinguished McKnight University Professor and Edgar F. Johnson Professor of Electronic Communication in the Department of Electrical and Computer Engineering. He has published 650 papers, is the inventor of 30 patents, and has authored the textbook VLSI Digital Signal Processing Systems (Wiley, 1999) and coedited the reference book Digital Signal Processing for Multimedia Systems (Marcel Dekker, 1999). His current research addresses VLSI architecture design of machine learning systems, hardware security, data driven neuroscience and molecular/DNA computing. Dr. Parhi is the recipient of numerous awards including the 2017 Mac Van Valkenburg award and the 2012 Charles A. Desoer Technical Achievement award from the IEEE Circuits and Systems Society, the 2004 F. E. Terman award from the American Society of Engineering Education, the 2003 IEEE Kiyo Tomiyasu Technical Field Award, the 2001 IEEE W. R. G. Baker prize paper award, and a Golden Jubilee medal from the IEEE Circuits and Systems Society in

aspects of our lives. This talk will explore machine learning applications in data driven neuroscience, and low energy implementations of machine learning and deep learning systems. Data driven neuroscience can exploit machine learning approaches including deep learning to generate hypotheses associated with biomarkers for specific neuro psychiatric disorders. In the first part, I will talk about use of machine learning to find biomarkers for epilepsy. In the second part of the talk, I will talk about approaches for energy efficient implementations for both traditional machine learning and deep learning systems. I will talk about the roles of feature ranking and incremental precision approaches in reducing energy consumption of traditional machine learning systems. I will then talk about reducing energy consumption in deep learning systems. I will describe our recent work on Perm DNN based on permuted diagonal interconnections in deep convolutional neural networks and how structured sparsity can reduce energy consumption associated with memory access in these systems.

KEYNOTE SPEAKER

OCTOBER 22 | TUESDAY | 08:20-09:20

Prof. Deming Chen, IEEE Fellow
University of Illinois at Urbana Champaign, USA

Bio: Dr. Deming Chen obtained his BS in computer science from University of Pittsburgh, Pennsylvania in 1995, and his MS and PhD in computer science from University of California at Los Angeles in 2001 and 2005 respectively. He joined the ECE department of University of Illinois at Urbana Champaign in 2005 and has been a full professor in the same department since 2015. His current research interests include system level and high level synthesis, machine learning, GPU and reconfigurable computing, and hardware security. He has given more than 110 invited talks sharing these research results worldwide. He obtained the Arnold O. Beckman Research Award from UIUC in 2007, the NSF CAREER Award in 2008, and eight Best Paper Awards. He also received the ACM SIGDA Outstanding New Faculty Award in 2010, and IBM Faculty Award in 2014 and 2015. In 2017 and 2019 respectively, he led a team to win the first place of DAC International System Design Contest in the IoT domain. He is included in the List of Teachers Ranked as Excellent in 2008 and 2017. He is the Donald Biggar Willett Faculty Scholar of College of Engineering, an IEEE Fellow, an ACM Distinguished Speaker, and the Editor in Chief of ACM Transactions on Reconfigurable Technology and Systems (TRETS). He is also involved with several startup companies, including co founding Inspirit IoT, Inc. in 2016.

TALK ON

Cognitive Computing on Heterogeneous Hardware Systems for the AI Revolution

Abstract: Many envision that AI (artificial intelligence) will usher in the next iteration of technology revolution, where humans and machines will work side by side to augment, enhance, or accelerate our ability to analyze, learn, create, and think. There are successful stories emerging fast already, such as IBM Watson, Microsoft HoloLens, and Google AlphaGo. One essential component to enable the new AI revolution is IoT (Internet of Things). Cognitive computing can learn from the rich IoT data, reason from models, and most importantly interact with us to perform complex tasks (ranging from healthcare to education to financial services) better than either humans or machines can do by themselves. Meanwhile, high performance computing would be of paramount importance to help achieve the grand vision of cognitive computing. In this talk, Prof. Chen will share his recent research results on machine learning, reconfigurable computing, GPU computing, and cognitive application benchmarking. He will also present his recent work on extremely fast software and hardware modeling and the automated software/hardware co design for accelerating cognitive computing workloads. Compelling AI applications will be introduced as well, such as autonomous driving and facial recognition.

KEYNOTE SPEA

Sunny Zhang, F
Director of Con

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China, Sunny i
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reference design, which became Intel
Lab China's 5G research on Radio Acc
widely adopted by industry. Sunny als
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Award, and Intel Achievement Award i
Prior joined Intel, Sunny was as the pl
2002 to 2004, he was at startup com
design.
Sunny got bachelor and master de
communication respectively. Publishec

TALK ON
Wireless Signal Processing at AI Era

Abstract: About 8 years ago, there we
course, you can imagine that the conc
quite a few innovation directions, such
5G now, which also talked about "wi
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