

**IEEE SIPS 2018 CONFERENCE PROGRAM ([www.sips2018.org](http://www.sips2018.org))**

**Technical Conference Program (updated on July 25, 2018)**

For the 7 tutorials on **Sunday October 21, 2018**, please go to the [tutorials page](#)

A **Welcome Reception** is scheduled for Sunday Oct. 21, 2018 at 6:30pm-8:00pm

Time	Monday, Oct. 22	Tuesday, Oct. 23	Wednesday, Oct. 24
8:10 – 8:30	Opening		
8:30 – 9:30	Keynote I: Kunle Olukotun - 'Designing Computer Systems for Software 2.0'	Keynote II: Oleg Smirnov - 'Modern Radio Interferometric Imaging Challenges: From MeerKAT Towards the SKA'	Keynote III: Larry Elder – 'Connectivity Challenges and Emerging Solutions'
9:30 – 9:50	Coffee break		
9:50 – 11:10	Lecture session I: Recent Advances in Architectures for Machine Learning  <b>Special Session *</b>	Lecture session V: Computing for Radio-Astronomy  <b>Special Session *</b>	Lecture session VIII: Signal Processing for Image/Video and IoT Energy  <b>Special Session *</b>
11:20 – 13:00	Lecture session II: DSP Algorithms *	Lecture session VI: Accelerators *	Lecture session IX: Design Methods *
13:00 – 13:50	Lunch		
13:50 – 15:30	Lecture session III: Wireless Comms. *	Lecture session VII: Applications *	Closing
15:30 – 16:20	Coffee break & Poster session I *	Coffee break & Poster session II *	Half-day trip Tour of MeerKAT/SKA Tour of Cape Town Sight Seeing
16:20 – 18:00	Lecture session IV: Algorithm/Architecture Co-Design *	Panel Discussion: MeerKaT and SKA	
19:00 – 22:00	Optional African Dinner with a Stranger or Friend	Gala and Awards Dinner	

\* -- See details of each Session on next pages

**MONDAY, Oct. 22**

08:10	Welcome & Opening	
08:30	Keynote I:	
	Chair: Kunle Olukotun, Stanford Univ	Designing Computer Systems for Software 2.0
	Tokunbo Ogunfunmi	
09:30	Coffee	
09:50	Special Session:	Aayush Ankit, Abhronil Sengupta and Kaushik Roy
		Neuromorphic Computing Across the Stack: Devices, Circuits and Architectures
10:10	Recent Advances in Architectures for Machine Learning	Anaam Ansari and Tokunbo Ogunfunmi
		Selective Data Transfer from DRAMs for CNNs
10:30	Chair: Chaitali Chakrabarty, Tokunbo Ogunfunmi	Shihui Yin, Xiaoyu Sun, Shimeng Yu, Jae-Sun Seo and Chaitali Chakrabarti
		A Parallel RRAM Synaptic Array Architecture for Energy-Efficient Recurrent Neural Network
10:50		Amogh Agrawal and Kaushik Roy
		RECache: ROM-Embedded 8-Transistor SRAM Caches for Efficient Neural Computing
11:20	DSP Algorithms	Payal Gupta and Monika Agrawal
		DOA Estimation OF Non Circular Signals Using Fourth Order Cumulant In Underdetermined Cases
11:40	Chair: TBD	Naty Sidaty, Pierre-Loup Cabarat, Wassim Hamidouche, Daniel Menard and Olivier Deforges
		Performance and Computational Complexity of the Future Video Coding
12:00		Stanislaw Gorlow
		Construction of Ambience Bases From Weighing Matrices With Application in Spatial Audio Coding
12:20		Jyoti Maheshwari, Rushi Jariwala, Somanath Pradhan and Nithin George
		Sparsity Aware Hybrid Adaptive Algorithms for Modeling Acoustic Paths
12:40		Ashishkumar Gudmalwar, Alok Kumar and Rama Rao Chevula
		Estimation of Fundamental Frequency based on Multichannel Combfiltering and Correlogram for Noisy Speech Signals
13:00	Lunch	

13:50	Wireless Communications	Jesús Rodríguez Sánchez, Fredrik Rusek, Muris Sarajlic, Ove Edfors and Liang Liu	Fully Decentralized Massive MIMO Detection Based on Recursive Methods
14:10	Chair: TBD	Yaping Zhang, Zhizhen Wu, Chunguo Li, Zaichen Zhang, Xiaohu You and Chuan Zhang	Expectation Propagation Detection with Neumann-Series Approximation for Massive MIMO
14:30		Yufeng Yang, Wence Zhang, Zaichen Zhang, Xiaohu You and Chuan Zhang	Efficient Compressed Landweber Detector for Massive MIMO
14:50		Oluwagbemiga Shoewu, Mary Adedoyin, Lateef Akinyemi and Lawrence Oborkhale	Fuzzy-Logic Based Path Loss Models for Metropolitan Environment
15:10		Sulaiman Saleem Patel, Tahmid Quazi and Hongjun Xu	A Genetic Algorithm for Designing Uncoded Space-Time Labelling Diversity Mappers
15:30	Posters I & coffee  Chair: TBD	Gabriele Coppolino, Carlo Condo, Guido Masera and Warren J. Gross	Efficient Operation Scheduling in Successive-Cancellation-based polar decoders
		Bin-Syh Yu, Yu Tsao, Shao-Wen Yang, Yen-Kuang Chen and Shao-Yi Chien.	Architecture Design of Convolutional Neural Networks for Face Detection on an FPGA Platform
		Jichen Wang, Jun Lin and Zhongfeng Wang.	Bandwidth Efficient Architectures for Convolutional Neural Network
		Michael Mesarcik, Daniel W. O'Hagan and Stephen Paine.	Low Cost FPGA based Implementation of a DRFM System
		Kazuki Yamada, Haruki Mori, Tetsuya Youkawa, Yuki Miyauchi, Shintaro Izumi, Masahiko Yoshimoto and Hiroshi Kawaguchi.	Adaptive Learning Rate Adjustment with Short-Term Pre-Training in Data-Parallel Deep Learning
		Yuqing Ren, Feng Shu, Liping Li, Zaichen Zhang, Xiaohu You and Chuan Zhang.	Efficient Blind Detection of Polar Codes
		Jake Eden, Thomas Kawchak and Vijaykrishnan Narayanan.	Indoor Navigation Using Text Extraction.
		Promila Agarwal, Minqiang Jiang, Nam Ling, Jianhua Zheng and Philipp Zhang.	Enhanced Intra Prediction Mode Coding by using Reference Samples
		Pei-Yun Tsai and Xiao-Sheng Huang.	Design of Iterative Hybrid Beamforming for Multi-User mmWave Massive MIMO Systems
		Yangcan Zhou, Jun Lin and Zhongfeng Wang.	Approximate Comparator: Design and Analysis

16:20	Algorithm-Architecture Co-design	Narges Mohammadi Sarband, Oscar Gustafsson and Mario Garrido	Obtaining Minimum Depth Sum of Products from Multiple Constant Multiplication
16:40	Chair: TBD	Jian Zhou and Chaitali Chakrabarti	Parallel Wavelet-based Bayesian Compressive Sensing Based on Gibbs Sampling
17:00		Sarfaraz Ahmed, Tahsin Sadia, Mahir Ashab and Tanzilur Rahman	Cost and Energy Efficient Solution for Solid Waste Bin Monitoring and Analysis
17:20		Jiejun Jin, Zaichen Zhang, Xiaohu You and Chuan Zhang	Massive MIMO Detection Based on Barzilai-Borwein Algorithm
17:40		Yahui Ji, Zhizhen Wu, Yifei Shen, Jun Lin, Zaichen Zhang, Xiaohu You and Chuan Zhang	A Low-Complexity Massive MIMO Detection Algorithm Based on Matrix Partition
19:00			

## TUESDAY, Oct. 23

08:30	Keynote II Chair: TBD	Oleg Smirnov, Rhodes Univ.	Modern Radio Interferometric Imaging Challenges: From MeerKAT Towards the SKA
09:30	Coffee		
09:50	Special Session: Computing for Radio-Astronomy	Nicolas Sourbier, Jean Francois Nezan, Cyril Tasse and Julien Hascoet	Optimization of Calibration Algorithms on an M... Embedded Platform
10:10	Chair: Oleg Smirnov, Cyril Tasse, Jean-Francois Nezan	Mickaël Seznec, Nicolas Gac, André Ferrari and François Orioux	A Study on Convolution Operator Using Half Precision Floating Point Numbers on GPU for Radioastronomy Deconvolution
10:30		Erik Ryman, Christoffer Fougstedt, Lars Svensson and Per Larsson-Edefors	Custom versus Cell-Based ASIC Design for Many-Channel Correlators
10:50		Elia Fankhauser and Jürgen Wassner	FPGA Implementation of a Multi-Channel Continuous-Throughput FFT Processor
11:20	Accelerators Chair: TBD	Chongzhou Fang, Ziyuan Shen, Zaichen Zhang, Xiaohu You and Chuan Zhang	Synthesizing a Neuron Using Chemical Reactions
11:40		Joonas Multanen, Heikki Kultala, Pekka Jääskeläinen, Timo Viitanen, Aleksi Tervo and Jarmo Takala	LoTTA: Energy-Efficient Processor for Always-On Applications

12:00		Koichi Kajihara, Shintaro Izumi, Seiya Yoshida, Yuji Yano, Hiroshi Kawaguchi and Masahiko Yoshimoto	Hardware Implementation of Autoregressive Model Estimation Using Burg's Method for Low-Power Spectral Analysis
12:20		Shih-Yi Wu, Yu-Sheng Lin, Wei-Chih Tu and Shao-Yi Chien	Hardware-Efficient Two-Stage Saliency Detection
12:40		Manqing Mao, Xiaoyu Sun, Xiaochen Peng, Shimeng Yu and Chaitali Chakrabarti	A Versatile ReRAM-based Accelerator for Convolutional Neural Networks
13:00	Lunch		
13:50	Applications	Rajarshi Saha, Bijit Kumar Das and Mrityunjoy Chakraborty	Sparsity Aware Fast Block LMS Algorithms for MIMO Radar Imaging
14:10	Chair: TBD	Ahmed Abdelhameed, Hisham Daoud and Magdy Bayoumi	Epileptic Seizure Detection Using Deep Convolutional Autoencoder
14:30		Tashreque Mohammed Haq, Safkat Arefin, Shamiur Rahman and Tanzilur Rahman	Extraction of Fetal Heart Rate from Maternal Abdominal ECG in the 3rd Trimester of Gestation: A Non-Invasive Approach for Reducing Stillbirth
14:50		Vasily Moshnyaga, Juntaro Shioyama and Koji Hashimoto	A Camera-Based Approach to Prevent Fingerprint Hacking
15:10		Yangyang Zhang and Erchin Serpedin	Outage Probability Analysis In a Cooperative Non-orthogonal Multiple Access Relaying Network
15:30	Posters II & Coffee  Chair: TBD	Ting-Yun Hsiao, Yung-Chang Chang and Ching-Te Chiu.	Filter-Based Deep-Compression with Global Average Pooling for Convolutional Networks.
		Bin Dai, Rongke Liu and Zhiyuan Yan.	New Min-Sum Decoders Based on Deep Learning for Polar Codes
		Laura Conde-Canencia and Lara Dolecek.	Nanopore DNA Sequencing Channel Modelling.
		Apostolos Modas, Simone Casale Brunet, Robert Stewart, Junaid Jameel Ahmad, Endri Bezati and Marco Mattavelli.	Shared-variables Synchronization Approaches on Dynamic Dataflow Programs
		Kai-Yen Wang, Yun-Lung Ho, Yu-De Huang and Fang Wai-Chi.	A 16 Channels Real-Time EEG Processing Based on ORICA Algorithm Using 28nm CMOS Technology.
		Yanzhou Liu, Lee Barford and Shuvra Bhattacharyya.	Generalized Graph Connections for Dataflow Modeling of DSP Applications.
		Abu Talha Khan, Sadia Afrin and Tanzilur Rahman.	Comparison of Principal Component Analysis and Partial Least Square Discriminant Analysis Coupled with Different Preprocessing Techniques in The Classification of EEG Signals
		Marzhan Bekbalanova, Mehdi Shafiee and Vipin Kizheppatt.	Data Acquisition System for Microwave Kinetic Inductance Detectors.

	Bing Liu, Rongke Liu, Zhanxian Liu and Ling Zhao.	An Efficient Implementation of LDPC Decoders on ARM Processors.
	Sheng Guan, Weicheng He, Wenjin Gu, Yuanzhao Hou, Yun Chen and Xiaoyang Zeng.	Multi-mode Study of Deep Learning Applications in Acoustic Signal Processing.
16:20	Panel Discussion:	
17:00		
19:00	Gala & Awards Dinner	

<b>WEDNESDAY, Oct. 24</b>		
08:30	Keynote III: Chair: TBD	Larry Elder, OneWeb On Connectivity Challenges and Emerging Solutions
09:30	Coffee	
09:50	Special Session: Signal Processing for Signal/Video and IoT Energy	Promila Agarwal, Minqiang Jiang, Nam Ling, Jianhua Zheng and Philipp Zhang Enhanced Intra Prediction Mode Coding by using Reference Samples
10:10	Chair: Yuhong Liu, Nam Ling	Ying Liu, Shuai Zhang, Fuping Wang and Nam Ling Tread Pattern Image Classification Using Convolutional Neural Network Based on Transfer Learning
10:30		Pavel Arnaudov and Tokunbo Ogunfunmi Raster Search Resolution Analysis for Fast Motion Estimation in HD Video Compression
10:50		Alejandro Hernandez Gerez, Kavin Kamaraj, Ramzi Nofal, Yuhong Liu and Behnam Dezfouli Energy and Processing Demand Analysis of TLS Protocol in Internet of Things Applications
11:10		Xunfei Jiang, Yuhong Liu, Xiaojun Ruan, Tuguldur Baigalmaa, Lam Nguyen, Daiki Akiyoshi and Charles Peck. Energy Modeling of Cluster System
11:40	Design Methods	Yuchen Zhuang, Zaichen Zhang, Xiaohu You and Chuan Zhang Arithmetic Computations Based on Chemical Reaction Networks
12:00	Chair: TBD	H. T. Kung, Bradley McDanel and Sai Zhang Mapping Systolic Arrays onto 3D Circuit Structures: Accelerating Convolutional Neural Network Inference
12:20		Anatoly Prihozhy, Simone Casale Brunet, Endri Bezati and Marco Mattavelli Efficient Dynamic Optimisation Heuristics for Dataflow Pipelines
12:40		John-Philip Taylor and Simon Winberg ALCHA: Introducing Arbitrary Fixed-point and Procedural Programming to FPGA Firmware Design
13:00		Alen Stojanov, Tyler Michael Smith, Dan Alistarh and Markus Pueschel Fast Quantized Arithmetic on x86: Trading Compute for Data Movement
13:20	Closing & Lunch	