

# The IEEE Computer Society's MASCOTS 2016 Modelling, Analysis and Simulation of Computer and Telecommunication Systems

Imperial College, London, UK

19-21 September 2016



## Technical Program

### Monday, September 19

08.30 – 09.00	Registration and Coffee
09.00 – 09.10	<b>Welcome and Opening Remarks</b>
09.10 – 10.00	<b>Keynote I – Placing Applications in Large-scale Distributed and Heterogeneous Environments</b> <i>Valeria Cardellini, University of Rome Tor-Vergata, Italy</i>
10.00 – 10.50	<b>Keynote II – Effectiveness: A New Metric in Performance Evaluation</b> <i>Gerardo Rubino, INRIA, France</i>
10.50 – 11.15	Coffee Break
11.15– 12.30	<b>Optimising the Cloud I</b> Room: Rm 408, EEE Building <span style="float: right;">Chair: TBD</span>
	<b>A Better Model for Job Redundancy: Decoupling Server Slowdown and Job Size</b> <i>Kristen Gardner, Mor Harchol-Balter and Alan Scheller-Wolf</i>
	<b>Exact Analysis of Energy-Aware Multiserver Queueing Systems with Setup Times</b> <i>Vincent Maccio and Douglas Down</i>
	<b>Optimal Provision of Multiple Service Types</b> <i>Paul Ezhilchelvan and Isi Mitrani</i>
12.30– 13.30	Lunch
13.30– 14.45	<b>Exploiting Big Data</b> Room: Rm 408, EEE Building <span style="float: right;">Chair: TBD</span>
	<b>Picky: Efficient and Reproducible Sharing of Large Datasets using Merkle-Trees</b> <i>Daniel Hintze and Andrew Rice</i>
	<b>An Uncertainty-Aware Approach to Optimal Configuration of Stream Processing Systems</b> <i>Poovab Jamshidi and Giuliano Casale</i>
	<b>Parallel Graph Processing on Modern Multi-Core Servers: New Findings and Remaining Challenges</b> <i>Assaf Eisenman, Lucy Cherkasova, Guilherme Magalhaes, Qiong Cai and Sachin Katti</i>

Monday, September 19 (continued)

14.45 – 16.00	<b>Performance of Storage Systems I</b> Room: Rm 408, EEE Building Chair: TBD
	<b>Performance Evaluation of a Tape Library System</b> <i>Ilias Iliadis, Yusik Kim, Slavisa Sarafijanovic and Vinodh Venkatesan</i>
	<b>Stochastic Modeling of Hybrid Cache Systems</b> <i>Gaoying Ju, Yongkun Li, Yinlong Xu, Jiqiang Chen and John C. S. Lui</i>
	<b>Exploiting Replication for Energy Efficiency of Heterogeneous Storage Systems</b> <i>Everett Rush and Nihat Altiparmak</i>
16.00 – 16.15	Coffee Break
16.15 – 17.55	<b>Energy Consumption</b> Room: Rm 408, EEE Building Chair: TBD
	<b>Modeling the Energy-Time Performance of MIC Architecture System</b> <i>Lavanya Ramapantulu, Thy Dao, Dumitrel Loghin, Nam Thoai and Yong Meng</i>
	<b>ALUPower: Data Dependent Power Consumption in GPUs</b> <i>Jan Lucas and Ben Juurlink</i>
	<b>Experimental Calibration and Validation of a Speed Scaling Simulator</b> <i>Carey Williamson and Arsham Skrenes</i>
	<b>Static Program Analysis for Identifying Energy Bugs in Graphics-Intensive Mobile Apps</b> <i>Chang Hwan Peter Kim, Daniel Kroening and Marta Kwiatkowska</i>
18.30	Welcome Reception

Tuesday, September 20	
08.30 – 09.00	Registration
09.00 – 9.50	<b>Keynote III – Reducing the Wag in the Tail by Sharding and Replication</b> <i>Peter Harrison, Imperial College London, UK</i>
9.50– 11.30	<b>Stochastic Models</b> Room: Rm 408, EEE Building Chair: TBD
	<b>Performance Modeling of Virtual Switching Systems</b> <i>Guillaume Artero Gallardo, Bruno Baynat and Thomas Begin</i>
	<b>Evacuee Flow Optimisation Using G-network with Multiple Classes of Positive Customers</b> <i>Huibo Bi</i>
	<b>Modeling Energy Packets Networks in the Presence of Failures</b> <i>Jean-Michel Fourneau, Andrea Marin and Simonetta Balsamo</i>
	<b>A Diffusion Model for Energy Harvesting Sensor Nodes</b> <i>Omer H. Abdelrahman and Erol Gelenbe</i>
11.30 – 11.45	Coffee Break
11.45 – 12.35	<b>Performance Analysis Automation</b> Room: Rm 408, EEE Building Chair: TBD
	<b>Performance Model Derivation of Operational Systems Through Log Analysis</b> <i>Mahmoud Awad and Daniel Menasce</i>
	<b>Pilot: A Framework that Understands How to Do Performance Benchmarks The Right Way</b> <i>Yan Li, Ethan Miller, Darell Long and Yash Gupta</i>
12:35 – 13:35	Lunch
13.35 – 15.15	<b>Wireless Mobile Networks</b> Room: Rm 408, EEE Building Chair: TBD
	<b>QoS-Aware CAPEX Minimization in Urban Off-Grid Radio Access Networks</b> <i>Gianluca Rizzo and Marco Ajmone Marsan</i>
	<b>Vertical Integration of CDN and Network Operator: Model and Analysis</b> <i>Patrick Maillé, Gwendal Simon and Bruno Tuffin</i>
	<b>Cloud-based Spectrum Sharing in Virtual Wireless Networks</b> <i>Fatemeh Shirzad and Majid Ghaderi</i>
	<b>Geographic Routing in Extreme-Scale Highly-Dynamic Mobile Ad-Hoc Networks</b> <i>Ben Newton, Jay Aikat and Kevin Jeffay</i>
15.15 – 15.30	Coffee Break
15.30 – 16.45	<b>Performance of Storage Systems II</b> Room: Rm 408, EEE Building Chair: TBD
	<b>RESAR: Reliable Storage at Exabyte Scale</b> <i>Thomas Schwarz, Ahmed Amer, Thomas Kroeger, Ethan Miller, Darell Long and Jehan-Francois Paris</i>
	<b>I/O Scheduling Schemes for Better I/O Proportionality on Flash-based SSDs</b> <i>Jaeho Kim, Eunjae Lee and Sam H. Noh</i>
	<b>An Empirical Evaluation of Enterprise and SATA-based Transactional Solid-State Drives</b> <i>Yongseok Son, Hara Kang, Jinyong Ha, Jongseong Lee, Hyuck Han, Hyungsoo Jung and Heon Young Yeom</i>

Tuesday, September 20 (continued)

<b>16.45 – 18.00</b>	<b>Workload and Program Analysis</b> Room: Rm 408, EEE Building Chair: TBD <b>Diplomat: Mapping of Multi-Kernel Applications Using A Static Dataflow Abstraction</b> <i>Bruno Bodin, Luigi Nardi, Paul Kelly and Michael O'Boyle</i> <b>Prospects for Shaping User-Centric Mobile Application Workloads to Benefit the Cloud</b> <i>Maciej Swiech, Huaqian Cai, Peter Dinda and Gang Huang</i> <b>Configurable and Efficient Memory Access Tracing via Selective Expression-based x86 Binary Instrumentation</b> <i>Simone Economo, Davide Cingolani, Alessandro Pellegrini and Francesco Quaglia</i>
<b>18.30</b>	Conference Dinner

Wednesday, September 21

08.30 – 09.00	Registration	
9.00 – 10.40	<b>Optimising the Cloud II</b> Room: Rm 408, EEE Building Chair: TBD	<b>Markov Processes</b> Room: Dennis Gabor Rm, 6 <sup>th</sup> Floor, EEE Building Chair: TBD
	<b>Robust Server Consolidation: Coping with Peak Demand Underestimation</b> <i>Diarmuid Grimes, Deepak Mehta, Barry O'Sullivan, Robert Birke, Lydia Chen, Thomas Scherer and Ignacio Castineiras</i>	<b>Product-forms for Probabilistic Input/Output Automata</b> <i>Filippo Cavallin, Andrea Marin and Sabina Rossi</i>
	<b>A Model Predictive Controller for Contention-Aware Resource Allocation in Virtualized Data Centers</b> <i>Mohammadreza Hoseinyfarahabady, Young Choon Lee, Albert Zomaya, Zahir Tari and Andy Song</i>	<b>Performance Evaluation of Fischer's Protocol through Steady-state Analysis of Markov Regenerative Processes</b> <i>Stefano Martina, Marco Paolieri, Tommaso Papini and Enrico Vicario</i>
	<b>Optimizing Secure SDN-enabled Inter-Data Centre Overlay Networks through Cognitive Routing</b> <i>Frederic Francois and Erol Gelenbe</i>	<b>Efficient Timeout Synthesis in Fixed-Delay CTMC Using Policy Iteration</b> <i>Lubos Korenciak, Antonin Kucera and Vojtech Rehak</i>
	<b>Energy Efficient Policies for Upstream Content Server Selection</b> <i>Sachin Sahane and Ricardo Lent</i>  <b>Online Work Distribution to Clouds</b> <i>Lan Wang, Olivier Brun and Erol Gelenbe</i>	<b>A Markov Reward Model Based Greedy Heuristic for the Virtual Network Embedding Problem</b> <i>Francesco Bianchi and Francesco Lo Presti</i>
10.40 – 11.10	Coffee Break	
11.10 – 12.30	<b>Wireless Networks</b> Room: Rm 408, EEE Building Chair: TBD	<b>Architectures</b> Room: Dennis Gabor Rm, 6 <sup>th</sup> Floor, EEE Building Chair: TBD
	<b>Parallel HTTP for Video Streaming in Wireless Networks</b> <i>Mohsen Ansari and Majid Ghaderi</i>	<b>Characterizing Performance and Power towards Efficient Synchronization of GPU Kernels</b> <i>Islam Harb and Wu-Chun Feng</i>
	<b>Optimal Cell Assignment Algorithms for Pico-Cell Networks</b> <i>Bart Post and Sem Borst</i>	<b>Designing and Enabling Simulation of Real-World GPU Network Applications with ns-3 and DCE</b> <i>Jared Ivey, Brian Swenson, George Riley and Margaret Loper</i>
	<b>Cooperation Stimulation and Security in Wireless Ad Hoc Networks - A Power-Efficient Bayesian Game Approach</b> <i>Jiexin Zhang, Xiaoxue Liu and Peidong Zhu</i>	<b>Modeling and Control of Concurrent Tasks in a Multi-Kernel GPGPU Environment</b> <i>Hao Li, Yicheng Tu and Bo Zeng</i>
	<b>A Performance Approach to Mobile Security</b> <i>Mihajlo Pavloski</i>	<b>Behavior-Aware Integrated CPU-GPU Power Management For Mobile Games</b> <i>Zhinan Cheng, Xi Li, Beilei Sun, Jiachen Song, Chao Wang and Xuehai Zhou</i>

Wednesday, September 21 (continued)

12.30 – 13.30	Lunch Break	
13.30 – 14.50	<b>System and Network Performance</b> Room: Rm 408, EEE Building Chair: TBD	<b>Reliability and Verification</b> Room: Dennis Gabor Rm, 6 <sup>th</sup> Floor, EEE Building Chair: TBD
	<b>Queueing Analysis of Software Defined Network with Realistic OpenFlow-based Switch Model</b> <i>Yuki Goto, Hiroyuki Masuyama, Bryan Ng, Winston Seah and Yutaka Takahashi</i>	<b>A Platform for Run-time Health Verification of Elastic Cyber-physical Systems</b> <i>Daniel Moldovan and Hong-Linh Truong</i>
	<b>Autoscaling Effects in Speed Scaling Systems</b> <i>Maryam Elahi and Carey Williamson</i>	<b>Energy storage in Smart Homes: Grid-convenience versus self-use and survivability</b> <i>Jannik Hüls and Anne Remke</i>
	<b>Achieving Efficiency without Sacrificing Model Accuracy: Network Calculus on Compact Domains</b> <i>Kai Lampka, Steffen Bondorf and Jens Schmitt</i>  <b>Bounding aggregations on phase-type arrivals for performance analysis of clouds</b> <i>Farah Ait Salaht and Hind Castel</i>	<b>Towards Systemic Risk Aware Engineering of Large-Scale Networks: Complex Systems Perspective</b> <i>Vladimir Marbukh</i>  <b>Towards a Scalable Test Solution for the Analysis of Interconnect Shorts in on-Chip Networks</b> <i>Biswajit Bhowmik, Jatindra Kumar Deka and Santosh Biswas</i>
14.50 – 15.10	Coffee Break	
15.10 – 16.10	<b>Data Management</b> Room: Rm 408, EEE Building Chair: TBD	<b>Sensing</b> Room: Dennis Gabor Rm, 6 <sup>th</sup> Floor, EEE Building Chair: TBD
	<b>Efficient Routing for Cost Effective Scale-out Data Architectures</b> <i>Ashwin Narayan, Vuk Markovic, Natalia Postawa, Anna King, Alejandro Morales, K. Ashwin Kumar and Petros Efstathopoulos</i>	<b>Data Modelling with Gaussian Process in Sensor Networks for Urban Environmental Monitoring</b> <i>Xiuming Liu, Teng Xi and Edith Ngai</i>
	<b>Efficient Memory Occupancy Models for In-Memory Databases</b> <i>Karsten Molka and Giuliano Casale</i>  <b>Understanding the Energy, Performance, and Programming Effort Trade-offs of Android Persistence Frameworks</b> <i>Jing Pu, Zheng Song and Eli Tilevich</i>	<b>TerrainLOS: An Outdoor Propagation Model for Realistic Sensor Network Simulation</b> <i>Sam Mansfield, Kerry Veenstra and Katia Obraczka</i>  <b>Dynamic clustering algorithm for tracking targets with high and variable celerity (ATHVC)</b> <i>Mohamed Toumi, Abderrahim Maizate, Ouzzif Mohammed and Salah Mohammed Saïd</i>

	Storage III	Memory
16.10 – 17.30	Room: Rm 408, EEE Building Chair: TBD	Room: Dennis Gabor Rm, 6 <sup>th</sup> Floor, EEE Building Chair: TBD
	<b>LayerMover: Storage Migration of Virtual Machine across Data Centers Based on Three-layer Image Structure</b> <i>Fei Zhang, Xiaoming Fu and Ramin Yahtapour</i>	<b>DIODE: Dynamic Inline-Offline DEduplication Providing Efficient I/O Performance and Space-saving for Primary Storage Systems</b> <i>Yan Tang, Jianwei Yin, Shuiguang Deng, Kexiong Dong and Zhaohui Wu</i>
	<b>Write Amplification with Write Skew</b> <i>Yue Yang and Jianwen Zhu</i>	<b>Improve Restore Speed in Deduplication Systems Using Segregated Cache</b> <i>Wenjie Liu, Ping Huang, Tao Lu, Xubin He, Hua Wang and Ke Zhou</i>
	<b>Bulk IO Storage Management for Big Data Applications</b> <i>Pratik Mishra, Mayank Mishra and Arun Somani</i>	<b>An Experimental Study on the Effect of Asymmetric Memory Latency of New Memory on Application Performance</b> <i>J. Hyun Kim, Young Je Moon and Sam H. Noh</i>
17.30	Closing Remarks	