IEEE MASCOTS 2020 – Final Program

Day 1: November 17, 2020

9.00 Welcome

9.10 Opening Keynote

Session Chair: *Maria Carla Calzarossa, University of Pavia (Italy)*

Gabriele Kotsis, Johannes Kepler University, Linz (Austria) **Intelligence? Smartness? Emotion? What do we expect from future computing machinery?** (video)

Bio: *Dr. Gabriele Kotsis is a Professor at the Johannes Kepler University (Linz, Austria) and she is the ACM President since July 2020. During her career, she has been appointed to many prestigious positions, including among the others, the Vice-Rector for research at JKU University and the President of the Austrian Computer Society. Professor Kotsis holds a PhD from the University of Vienna. Her research interests include performance evaluation and workload characterization applied to many different application domains.*

10.00 Coffee Break

10.20 Traffic and network modeling (1h)

Session Chair: *Tadeusz* Czachorski*, IITiS (Poland)*

Shaojun Zhang, Chen Wang and Albert Zomaya **Adversarial attacks in a deep reinforcement learning based cluster scheduler**

Huibo Bi, Erol Gelenbe and Yanyan Chen **Incentive mechanism for collective coordination in an urban intelligent transportation system using G-network**s

Beom-Su Kim and Ki-Il Kim **A Priority-based Dynamic Link Scheduling Algorithm Using Multi-criteria Decision Making in Wireless Body Area Networks**

11.20 Hardware optimization (55min)

Session Chair: *Krzysztof Grochla, IITiS (Poland)*

Harsha Sharma, Wenfei Wu and Bangwen Deng **Symbolic Execution for Network Functions with Time-Driven Logic**

Christian Helm, Soramichi Akiyama and Kenjiro Taura **Reliable Reverse Engineering of Intel DRAM Addressing Using Performance Counters**

June-Hyung Kim, Youngjae Kim, Safdar Jamil and Sungyong Park **A NUMA-aware NVM File System Design for Manycore Server Applications** (Short paper)

12.15 Lunch break

13.00 Performance optimization (1h 20 min)

Session Chair: *Soraya Zertal, University of Versailles (France)*

Fuad Aleskerov, Anna Rezyapova, Alina Roman and Vyacheslav Yakuba **New Centrality Measures in Networks and their Applications to the International Trade and Migration Networks**

Erol Gelenbe, Pawel Boryszko, Miltiadis Siavvas and Joanna Domanska **Optimum Checkpoints for Time and Energy**

Pedro Mendes, Maria Casimiro, Paolo Romano and David Garlan **TrimTuner: Efficient Optimization of Machine Learning Jobs in the Cloud via Sub-Sampling**

Anil Kirmaz, Diomidis S. Michalopoulos, Irina Balan and Wolfgang Gerstacker **Mobile Network Traffic Forecasting Using Artificial Neural Networks**

14.20 Data driven systems (1 h 20 min)

Session Chair: *Emiliano Casalicchio, University of Rome Sapienza (Italy)*

Renato Cunha and Luiz Chaimowicz **Towards a common environment for learning scheduling algorithms**

Malek Musleh, Roberto Penaranda, Allister Alemania, Pedro Yebenes Segura, Gene Wu, Jan Zielinkski, Krzysztof Raszkowski, Nan Ni, Scott Diesing, Anupama Kurpad, Ram Huggahalli, Curt Bruns, Steven Miller and Sujoy Sen **Fabsim-X: A simulation Framework for the Analysis of Large-Scale Topologies and Congestion Control Protocols in Data Center Networks**

Vaibhav Saxena, K. R. Jayaram, Saurav Basu, Ashish Verma and Yogish Sabharwal **Effective Elastic Scaling of Deep Learning Workloads**

Jehan-Francois Paris and Thomas Schwarz **Merkle Hash Grids instead of Merkle Trees**

15.40 Coffee Break

16.00 Hardware/storage (1h 20 min)

Session Chair: *Ricardo Lent, University of Houston (US)*

Mohammad Hossein Hajkazemi, Mania Abdi and Peter Desnoyers **µCache: a mutable cache for SMR translation layer**

Onkar Patil, Frank Mueller, Latchesar Ionkov, Jason Lee and Michael Lang **Symbiotic HW Cache and SW DTLB Prefetching for DRAM/NVM Hybrid Memory**

Roman Pletka, Nikolaos Papandreou, Radu Stoica, Haris Pozidis, Nikolas Ioannou, Tim Fisher, Aaron Fry, Kip Ingram and Andrew Walls **Improving NAND flash performance with read heat separation**

Maher Kachmar and David Kaeli **A Smart Background Scheduler for Storage Systems**

Day 2: November 18, 2020

9.00 Performance evaluation (1h 40min)

Session Chair: *Daniele Tessera, Catholic University of Sacred Heart (Italy)*

Tatsuhiro Chiba and Takeshi Yoshimura **Investigating Genome Analysis Pipeline Performance on GATK with Cloud Object Storage**

Fabiana Rossi, Valeria Cardellini and Francesco Lo Presti **Self-adaptive Threshold-based Policy for Microservices Elasticity**

Alim Ul Gias and Giuliano Casale **COCOA: Cold Start Aware Capacity Planning for Function-as-a-Service Platforms**

Thomas Prantl, Peter Ten, Lukas Iffländer, Alexandra Dmitrenko, Samuel Kounev and Chrisitian Krupitzer **Evaluating the Performance of a State-of-the-Art Group-oriented Encryption Scheme for Dynamic Groups in an IoT Scenario**

Andrea Gulino, Arif Canakoglu, Stefano Ceri and Danilo Ardagna **Performance Prediction for Data-driven Workflows on Apache Spark**

10.40 Coffee Break

11.00 Keynote speech

Session Chair: *Erol Gelenbe, IITiS (Poland)*

Ernesto Damiani, University of Milan (Italy) and Khalifa University (UAE) **Mobile network data for risk assessment in the time of COVID: the PLACES approach**

Abstract*: The talk discusses the approach used in the PLACES project, relying on mobile network data such as CDRs to derive spatio-temporal probabilistic models. PLACES allows to study the dynamics of contagious diseases, providing a sound basis to (i) predicting the evolution of collective phenomena and (ii) assessing collective risk. The talk also discusses potential coupling of PLACES models to the encounter-based systems implemented as apps that use device-to-device channels to exchange opaque codes.*

Bio: *Dr. Ernesto Damiani is the Senior Director of Robotics and Intelligent Systems Institute at Khalifa University, Abu Dhabi, UAE. He is also a Director of the Khalifa University Center for Cyber Physical Systems (C2PS). Dr. Damiani is the Chair of the Information Security Program and a Research Professor in EBTIC. He leads the SESAR research lab at the Department of Computer Science, Università degli Studi di Milano, Italy. He is also the President of the Italian Consortium of Computer Science Universities (CINI). Ernesto's research interests include secure service-oriented architectures, privacy-preserving Big Data analytics and Cyber-Physical Systems security.*

12.00 Lunch break

13.00 Cloud/fog (1h 35min)

Session Chair: *Erol Gelenbe, IITiS (Poland)*

Ali Fahs, Guillaume Pierre and Erik Elmroth **Voilà: Tail-Latency-Aware Fog Application Replicas Autoscaler**

Johannes Grohmann, Daniel Seybold, Simon Eismann, Mark Leznik, Samuel Kounev and Jörg Domaschka **Baloo: Measuring and Modeling the Performance Configurations of Distributed DBMS**

Mulugeta Ayalew Tamiru, Guillaume Pierre, Johan Tordsson and Erik Elmroth **Instability in Geo-Distributed Kubernetes Federation: Causes and Mitigation**

William Viktorsson, Cristian Klein and Johan Tordsson Security-Performance Trade-offs of Kubernetes Container Runtimes (Short paper)

Moiz Arif, M. Mustafa Rafique, Seung-Hwan Lim and Zaki Malik **Infrastructure-Aware TensorFlow for Heterogeneous Datacenters**

14.35 Coffee Break

15.00 Performance modeling (1h 55min)

Session Chair: *Raymond Marie, University of Rennes (France)*

Ayat Zaki-Hindi, Salah-Eddine Elayoubi and Tijani Chahed **Model-Aided Learning for URLLC Transmission in Unlicensed Spectrum**

Emilio Incerto, Annalisa Napolitano and Mirco Tribastone **Statistical Learning of Markov Chains of Programs**

Ioannis Koukoutsidis **Age of Information in an Overtake-Free Network of Quasi-Reversible Queues**

Youssef Ait El Mahjoub, Hind Castel and Jean-Michel Fourneau **Energy Packet Networks with general service time distribution**

Marek Molęda, Alina Momot and Dariusz Mrozek **Concept Drift and Avoiding its Negative Effects in Predictive Modeling of Failures of Electricity Production Units in Power Plants**

Eitan Bachmat and Josu Doncel **Non-Asymptotic Performance Analysis of Size-Based Routing Policies** (Short paper)