Proposal for Special Session at IEEE CASE 2021

Goal/topic:
Simulation optimization is to utilize the information in simulation to efficiently optimize the performance of a stochastic system. Traditionally, the stochastic model is given a priori in simulation. More recently, big data and data analytics have fundamentally reshaped many areas including operations research. In the real-world, data are continuously collected by numerous cheap and information-sensing Internet-of-Things (IoT) devices such as mobile devices, aerial, software logs, cameras, and wireless sensor networks. In a Cyber-physical system, the digital twin provides both the elements and the dynamics of how an IoT device operates and lives throughout its life cycle, and it integrates artificial intelligence, machine learning and software analytics with spatial network graphs to create living digital simulation models that update and change as their physical counterparts change.

We propose to organize a special session on Simulation Optimization in New Information Age in the upcoming CASE2021. This session is devoted to discussing new opportunities and challenges for simulation optimization. It will provide a good opportunity for researches from different disciplines to interact with each other. This includes but does not limit to researchers from simulation optimization, discrete event dynamic systems, Markov decision processes, artificial intelligence, machine learning, manufacturing, healthcare, quality and risk control, transportation, and robotics. Just to name a few. Such a combination would provide a perfect match for the diverse background of audiences in CASE.

Session Title: Simulation Optimization in New Information Age

Organizers:

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Contributions:

1. A Time-series Probabilistic Preventive aintenance Strategy based on Multi-class Equipment Condition Indicators, Feng Liu(a), Hao Sun(b), and Rui Peng(c)， a: School of Management Science and Engineering, Dongbei University of Finance and Economics, Dalian,China. liufengapollo@163.com, b: School of Applied Finance and Behavioral Science, Dongbei University of Finance and Economics, Dalian, China. sunhao8481@yeah.net, c: School of Economics and Management, Beijing University of Technology, Beijing, China, pengrui1988@bjut.edu.cn, liufengapollo@163.com

Proposal 26 submitted to 2021 17th IEEE International Conference on Automation Science and Engineering (CASE). Received February 9, 2021.

2. Title: A Deadlock Traffic Control Method for Automated Guided Vehicle Systems, Maoning Chen, Yuangen Lu, Canrong Zhang, Research Center for Modern Logistics, Shenzhen International Graduate School, Tsinghua University, Shenzhen 518055, China, Department of Industrial Engineering, Tsinghua University, Beijing 10 0 084, China, crzhang@sz.tsinghua.edu.cn
3. Title: An optimization-based speed-control method for high frequency buses serving curbside stops, Bomin Bian[a], Ning Zhu(*)[a], Michael Pinedo[b] , Shoufeng Ma[a], Qinxiao Yu,[a] [a]Institute of Systems Engineering, College of Management and Economics, Tianjin University, Tianjin, 300072, China , [b]Stern School of Business, New York University, New York, New York 10012, USA, zhuning@tju.edu.cn
4. Distributionally Robust Optimization of Train Scheduling and Passenger Flow Control in Urban Rail Transit, Yuting Hu and Shukai Li, State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University
5. Cluster Sampling for Morris Method Made Easy, Wen Shi, Central South University, shi3wen@163.com
6. Title: Optimal Simulation procedure for improving the efficiency of elite-guided continuous ant colony optimization; Author(s): Runhang Ge, Si Zhang; Affiliation: Shanghai University; Email: zhangsi817@sina.com
7. Intelligent Yard Crane Scheduling in a New Automated Container Terminal, Xinjia JIANG, cemjxj@hotmail.com College of Economics and Management, Nanjing University of Aeronautics and Astronautics
8. Tri-Objective Simulation-based Optimization for Network-wide Traffic Signal Timing under Cyber-attacks. Liang Zheng. School of Traffic and Transportation Engineering, Central South University. zhengliang@csu.edu.cn
9. Simulation-based Risk Optimization for Optimal Buffer Design of Inventory, Jin Xiao, Kaustav Kundu, Odkhishig Ganbold, Monica Jethra, Centre for Next Generation Logistics, National University of Singapore, isejinx@nus.edu.sg
10. A strategy for autonomous source searching using GMM to fit the estimate of the source location, Yatai Ji, Bin Chen, Yong Zhao, Zhengqiu Zhu, College of Systems Engineering, National University of Defense Technology, Changsha, Hunan, China, nudtcb9372@gmail.com
11. Enabling Real-time Simulation-based Decision Making with Machine Learning Guided Intelligent Sampling, Travis Goodwin, Jie Xu, Chun-Hung Chen: George Mason University, Nurcin Celik: The University of Miami, jxu13@gmu.edu
12. Title: On the Interface Between Nested Designs and the Multi-step Interpolator, Author: Tianqi Zhang and Qiong Zhang, Clemson University, Email: qiongz@clemson.edu
13. Title: Estimating the Maximum Mean: An Upper Confidence Bound Approach, Kun Zhang, Institute of Statistics and Big Data, Renmin University of China , Guangwu Liu, College of Business City University of Hong Kong, Wen Shi, Business School, Central South University , kunzhang@ruc.edu.cn
14. Title: Optimizing Emergency Department Resource Allocations via Simulation, Weiwei Chen (Rutgers University), Siyang Gao (City University of Hong Kong), Wenjie Chen (City University of Hong Kong), wchen@business.rutgers.edu
15. Replica-exchange method for non-convex optimization, Jing Dong, Columbia University and Xin T Tong, National University of Singapore, jing.dong@gsb.columbia.edu
16. Information-Bottleneck-Based Exploration and State Representation Learning for Reinforcement Learning, Qi Liu，Yanjie Li, Harbin Institute of Technology Shenzhen, autolyj@hit.edu.cn

Proposals should neither be only with authors from one single country nor include more than 2 papers from the same institution.

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