41ST IEEE INTERNATIONAL PERFORMANCE COMPUTING AND COMMUNICATIONS CONFERENCE

IEEE IPCCC 2022

IEEE

IEEE COMPUTER SOCIETY

IPCCC 2022

NOVEMBER 11TH - 13TH

AUSTIN, TEXAS, USA

IPCCC.ORG

Message from the IPCCC 2022 General Co-Chairs

On behalf of the organization committee, it is our great pleasure to welcome you to the 41st IEEE International Performance, Computing, and Communications Conference (IPCCC 2022) in Austin, Texas, USA. After two years of fully virtual conferences, we are excited to have a hybrid meeting. We are pleased to continue the tradition of IEEE IPCCC, a premier conference on the performance of computer and communication systems, to offer a high-quality technical program in a friendly setting that facilitates close interactions among participants.

We would like to thank many people who have contributed to this year's IPCCC program. Likewise, we wish to thank the paper authors for their interest and for choosing IPCCC as the channel to present their quality research. We are grateful to the members of the Technical Program Committee and the additional reviewers for providing quality reviews. We would also like to thank the IPCCC 2022 Organizing Committee. Their efforts make the conference a success. We also appreciate the guidance of the IPCCC 2022 Steering Committee. It has been a privilege for us to work with such a marvelous group of dedicated professionals.

Last but not least, we would like to thank the IEEE Computer Society and the IEEE Computer Society Technical Committee on Computer Communications (TCCC) for their continuing sponsorship of IPCCC.

On behalf of the conference Executive Committee, we welcome you to IPCCC 2022 in Austin or wherever you are. We do hope that you will find IPCCC 2022 to be an enriching and enjoyable experience!

Enjoy IPCCC 2022!

■ **Ningfang Mi & Nils Aschenbruck, IPCCC 2022 General Co-Chairs**

Message from the IPCCC 2022 Technical Program Co-Chairs

Welcome to the 41st edition of the IEEE International Performance Computing and Communications Conference (IPCCC 2022)! This year, we are glad to be able to host the conference in Austin, Texas, USA physically, whereas some of the sessions will be remote due to the existing travel restrictions. IPCCC 2022 received 109 legitimate paper submissions (96 full, 11 short, 2 poster papers). Out of these submissions, 26 papers were accepted as full papers (acceptance ratio of 23.9%). Each paper was thoroughly reviewed by at least 3 reviewers. In addition, 29 papers were accepted as short papers and 5 as poster papers. Full papers, short papers, and poster papers are all included in the IPCCC conference proceedings.

We would like to express our sincere gratitude to all who have contributed to the IPCCC 2022 program. First, we thank the authors of all paper submissions, regardless of papers' acceptance statuses, for their efforts and submitting their quality research work to IPCCC. Second, we are grateful for the support of 118 Technical Program Committee (TPC) members for their fair, timely, and constructive reviews. The work of the authors and the TPC members contribute to the quality of the conference. Third, we thank the IPCCC 2022 Organizing Committee and Steering Committee for their support. Finally, we would like to welcome all attendees to the conference and we greatly appreciate your participation. We hope you will find the IPCCC 2022 program interesting, we know this year's conference will provide great experiences to all attendees.

■ **Gürkan Solmaz & Xiuzhen (Susan) Cheng, IPCCC 2022 Technical Program Co-Chairs**

The International Performance, Computing and Communications Conference is the premier IEEE conference presenting research in the performance of computer and communications systems. For four decades IPCCC has been a research forum for academic, industrial and government researchers.

Program Contents ■ IPCCC 2022 Conference

■ All Program Times are USA Central Standard Time (CST) ■

Announcing IPCCC 2023

San Diego / Anaheim, California, USA

November-December 2023

Paper Abstract Due: June 15th, 2023
Full Paper Due: June 30th, 2023
Acceptance Notification: August 15th, 2023
Camera Ready Due: August 30th, 2023

For Conference Details as They Become Available Please Check IPCCC.ORG

IPCCC 2022 Executive Committee

General Co-Chairs

Nils Aschenbruck
Osnabrück University, Germany
aschenbruck@uos.de

Ningfang Mi
Northeastern University, USA
ningfang@ece.neu.edu

Co-General Vice-Chairs

Feng Wang
Arizona State University, USA
fwang25@asu.edu

Ruozhou Yu
North Carolina State University, USA
ryu5@ncsu.edu

Program Co-Chairs

Gürkan Solmaz
NEC Labs Europe, Germany
gurkan.solmaz@neclab.eu

Xiuzhen (Susan) Cheng
Shandong University, China
xzcheng@sdu.edu.cn

Poster Chair

Venugopel Mani
Walmart, USA
manix025@umn.edu

EDAS Chair

Huayi Qi
Shandong University
qihuayi@mail.sdu.edu.cn

Publications Chair

Kathlene Hurt
SiFive, USA
k.r.hurt@ieee.org

Publicity Chairs

Matthias Wübbeling
The University of Bonn, Germany
matthias.wuebbeling@cs.uni-bonn.de

Wei Li
Georgia State University, USA
wli28@gsu.edu

Yingjie Wang
Yantai University, China
towangyingjie@163.com

Financial Chair

Nasr Ullah
SiFive, USA
nasr.ullah@ieee.org

Web Chair

Neil Nelson
NVIDIA, USA
webmaster@ipccc.org

Registration Chair

Jack Chen
Arm, USA
registration@ipccc.org
fax: 512-532-6471

IPCCC 2022 Program Committee

Flavio Cirillo
NEC Laboratories Europe

Abdullah Aydeger
Florida Institute of Technology

Ahyoung Lee
Kennesaw State University

Alexandru G. Bardas
University of Kansas

Amine Dhraief
University of Manouba

Annalisa Massini
Sapienza University of Rome

Byeong Kil Lee
University of Colorado at Colorado Springs

Cliff Zou
University of Central Florida

Daehee Seo
Sangmyung University

Eirini Eleni Tsiropoulou
University of New Mexico

Feng Tian
Nanjing University of Posts & Telecommunications

Feng Yan
University of Nevada, Reno

Florian Klingler
TU Ilmenau

Hengky Susanto
Hong Kong University of Science & Technology

Ing-Ray Chen
Virginia Tech

Ionut Cardei
Florida Atlantic University

Isabel Wagner
De Montfort University

Jun Shao
Zhejiang Gongshang University

Junling Li
Southeast University

Klaus David
University of Kassel

Kui Wu
University of Victoria

Lixin Li
Northwestern Polytechnical University

Lixin Wang
Columbus State University

Liyan Li
Zhejiang University

Luca Davoli
University of Parma

Paolo Bellavista
University of Bologna

Shijie Jia
Institute of Information Engineering, Chinese Academy of Sciences

Siyao Cheng
Harbin Institute of Technology

Tao Xiang
Chongqing University

Yang Wang
La Salle University

Yi Zhao
Tsinghua University

Ying Mao
Fordham University

Yuqing Zhu
California State University Los Angeles

Zhiguo Shi
Zhejiang University

Zhipeng Cai
Georgia State University

Zhonghong Ou
Beijing University of Posts & Telecommunications

Alexander L Wijesinha
Towson University

Atakan Aral
University of Vienna

Chentao Wu
Shanghai Jiao Tong University

Chiara Boldrini
IIT-CNR

Deli Qiao
East China Normal University

Egemen K. Çetinkaya
Verizon

Fangming Liu
Huazhong University of Science & Technology

Gokhan Secinti
Istanbul Technical University

Himal A Suraweera
University of Peradeniya

Honggang Zhang
University of Massachusetts Boston

Houbing H Song
Embry-Riddle Aeronautical University

Huaqing Wu
University of Calgary

Hyunbum Kim
Incheon National University

Jamil Y Khan
The University of Newcastle

Jing Gong
KTH Royal Institute of Technology

Joong-Lyul Lee
University of North Carolina at Pembroke

Juliana de Santi
UTFPR - Federal University of Technology - Paraná

Kazuya Sakai
Tokyo Metropolitan University

Liam Murphy
University College Dublin

Liangyi Gong
Computer Network Information Center, Chinese Academy of Sciences

Loreto Pescosolido
CNR - Italian National Research Council

Matthias Wuebbeling
Fraunhofer FKIE

Meng Han
Kennesaw State University

Michael P McGarry
University of Texas at El Paso

Mohammad Shojafar
University of Surrey

Myounggyu Won
University of Memphis

Oliver P. Waldhorst
Karlsruhe University of Applied Sciences

Peixiang Liu
Nova Southeastern University

Prasad Calyam
University of Missouri-Columbia

Qing Li
Peng Cheng Laboratory

Seyong Lee
Oak Ridge National Laboratory

Symeon Papavassiliou
National Technical University of Athens

Walid Saad
Virginia Tech

William C Headley
Virginia Tech

Xiaojun Ruan
California State University, East Bay

Xiaomei Zhang
University of South Carolina Beaufort

Yaping Cui
Chongqing University of Posts & Telecommunications

Yuan Zhang
Nanjing University

Yun Lin
Harbin Engineering University

Zhangyu Guan
University at Buffalo

Zhen Ling
Southeast University

Zhuo Lu
University of South Florida

Bin Cheng
NEC Laboratories Europe GmbH

Bohao Feng
Beijing Jiaotong University

Chen Gong
University of Science and Technology of China

Edward Au
Huawei Technologies Co., Ltd.

Eyuphan Bulut
Virginia Commonwealth University

Gürkan Solmaz
NEC Laboratories Europe

Jad Nasreddine
i2CAT Foundation

Jian Liu
University of Tennessee, Knoxville

Jian Mao
Beihang University

Jiayin Wang
Montclair State University

M. Mustafa Rafique
Rochester Institute of Technology

Meng Qin
School of Electronics & Computer Engineering, Peking University

Mustafa I Akbas
Embry-Riddle Aeronautical University

Qiang Duan
Pennsylvania State University

Ricardo Lent
University of Houston

Shameek Bhattacharjee
Western Michigan University

Song Yang
Beijing Institute of Technology

Sriram Ravichandran
SSN College of Engineering

Ting Li
Emory University

Ulf Kulau
Hamburg University of Technology

Vivek Vaidyanathan
Google

Wanqing Tu
Durham University

Weichao Wang
University of North Carolina at Charlotte

Xiaoliang Chen
Sun Yat-Sen University

Xu Zheng
University of Electronic Science & Technology of China

Yi Shang
University of Missouri

Zhicheng Yang
PAII Inc.

Abdellaziz Walid
MAISI Research Group, ENSA, Ibn Zohr University

Abhishek Mukherji
Accenture Inc.

Feng Li
Shandong University

Mohsen Amini Salehi
University of Louisiana Lafayette

Preetha Thulasiraman
Naval Postgraduate School

Qinghua Li
University of Arkansas

Ruidong Li
Kanazawa University

Saptarshi Debroy
City University of New York

Xianfu Chen
VTT Technical Research Centre of Finland

Xiao Fu
Nanjing University

Xili Wan
Nanjing Tech University

Younghee Park
San Jose State University

Yujie Tang
Dalhousie University

IPCCC 2022 Day One ▪ Friday, November 11TH

▪ **Registration Opens:** 13:00 CST ▪ **Opening Remarks & Introduction:** 13:30-14:00 CST

Session 1.0: Keynote Speaker: 14:00-15:15 CST [Room 400]

AI-Based Control and Orchestration in the Open RAN: Architectures, Algorithms, Testbeds

Tommaso Melodia - William Lincoln Smith Professor at Northeastern

Break: 15:15-15:30

Session 1.1: Network Optimization

15:30-16:45 CST ▪ Chair: Ruozhou Yu [Room 400]

Toward a Shared Sense of Time for a Network of Batteryless, Intermittently-powered Nodes: Vishal Deep, Mathew L. Wymore, Daji Qiao and Henry Duwe (Iowa State University, USA)

*__The Effects of a Performance Enhancing Proxy on TCP Congestion Control Over a Satellite Network:__ Mingxi Liu, Yongcheng Liu, Zhifei Ma, Zachary Porter, Saahil Claypool, Mark Claypool, Jacob Tutlis (Worcester Polytechnic Institute, USA); Jae Chung and Feng Li (Viasat, USA)

*__Tropical Geometric Route Decision-making in Simulated Lunar Gateway Communications:__ Jacob A Cleveland, Alan Hylton, Robert Short (NASA Glenn Research Center, USA)

Break: 16:45-17:00

Session 1.2A: Network Optimization, Security & Privacy (Virtual) – 17:00-19:00 CST ▪ Chair: Matthias Wübbeling

[Zoom A Link: tinyurl.com/IPCCC2022-ZoomA | Code: ipccc2022]

FATSS: Filter-assisted Tuple Space Search for Packet Classification: Jiayao Wang, Ziling Wei, Baosheng Wang, Jincheng Zhong and Shuhui Chen (National University of Defense Technology, China)

Privacy-preserving Closest Point Determination Based on Ciphertext Comparison: Yahan Hu, Kewei Lv, Jie Ma, Bin Qi (University of Chinese Academy of Sciences, China)

TForm-RF: An Efficient Data Augmentation for Website Fingerprinting Attack: Yongxin Chen, Yongjun Wang, Luming Yang, Yuchuan Luo and Mantun Chen (National University of Defense Technology, China)

zk-PCN: A Privacy-Preserving Payment Channel Network Using zk-SNARKs: Wenxuan Yu, Minghui Xu, Dongxiao Yu and Xiuzhen Cheng (Shandong University, China); Qin Hu (Indiana University-Purdue University Indianapolis, USA); Zehui Xiong (Singapore University of Technology & Design, Singapore)

An Efficient Adaptive Denoising Sketch for Per-flow Traffic Measurement: Chen Lou and Hongli Xu (University of Science and Technology of China, China); Yu-e Sun, He Huang, Yang Du and Guoju Gao (Soochow University, China); Shigang Chen (University of Florida, USA)

*__HEX-BLOOM: An Efficient Method for Authenticity and Integrity Verification in Privacy-preserving Computing:__ Ripon Patgiri and Malaya Dutta Borah (National Institute of Technology Silchar, India)

*__A Multi-controllers Architecture for Software-defined Underwater Acoustic Sensor Networks:__ Yaliang Shi, Xiwen Huang, Qihang Jiang and Qiuling Yang (Hainan University, China)

*__A Novel Approach to Energy Efficiency Optimization in NOMA-aided V2X Networks:__ Liqing Shan and Fenghui Zhang (Southeast University, China)

*__Eliminating Communication Bottlenecks in Consensus Protocols Using NDN:__ Yuxi Sun, Wang Yang and Lihuan Hui (Central South University, China)

*__MODLSTM: A Method to Recognize DoS Attacks on Modbus/TCP:__ Hao Zhang, Yuandong Min, Sanya Liu, Hang Tong and Yaopeng Li (Central China Normal University, China)

Session 1.2B: System Optimization (Virtual)

17:00-19:00 CST ▪ Chair: Feng Wang

[Zoom B Link: tinyurl.com/IPCCC2022-ZoomB | Code: ipccc2022]

Max-Min Fairness Based Scheduling Optimization Mechanism on Switches: Xijia Lu, Xingwei Wang, Jie Jia, Min Huang and Xue Wang (Northeastern University, China)

SIFOL: Solving Implicit Flows in Loops for Concolic Execution: Yicheng Zeng, Jiaqian Peng, Zhihui Zhao, Zhanwei Son, Hongsong Zhu and Limin Sun (China Academy of Science, China)

HetGLM: Lateral Movement Detection by Discovering Anomalous Links with Heterogeneous Graph Neural Network: Xiaoqing Sun and Jiahai Yang (Tsinghua University, China)

Libra: A Stateful Layer-4 Load Balancer with Fair Load Distribution: Xingong Guo, Longlong Zhu and Dong Zhang (Fuzhou University, China); Chunming Wu (Zhejiang University, China)

RCM: Residue-aware Consolidation for Heterogeneous MLaaS Cluster: Kefeng Wu, Xiongfeng Hu, Yibo Jin and Zhuzhong Qian (Nanjing University, China); Chunlei Xu and Mingming Zhang (Jiangsu Electric Power Company, China)

*__A Trusted Distributed Crowdsourcing Framework Based on User Preferences:__ Shulin Sun, Lijun Sun, Xinran Ma, ZhenZhen Pan and Hongxin Jin (Qing Dao University of Science and Technology, China)

*__Trace Characterization-based Cache Replacement Policy:__ Byeong Kil Lee and Shafayat Anik (University of Colorado at Colorado Springs, USA)

*__UltraCDC: A Fast and Stable Content-defined Chunking Algorithm for Deduplication-based Backup Storage System:__ Peng Zhou, Zhenyu Wang and HaoTong Zhang (South China University of Technology, China); Wen Xia (Harbin Institute of Technology, China)

*__DTS: A Dual Transport Switching Scheme for RDMA-based Applications:__ Yuxin Chen, Zhiqiang He and Bei Hua (University of Science and Technology of China, China); Dongyang Wang and Gang Lu, Junhong Ye and Feng Jin (Tencent Inc., China)

*__Data Query Routing Algorithm with Cluster Bridge for Wireless Sensor Network:__ Jianpo Li, Kun Liu and Jun Wang (Northeast Electric Power University, China)

Session 1.3: Poster Session – 19:00-20:30 CST ▪ Chair: Venugopel Mani [Room 406]

Dynamic Reinforcement Learning-based Scheduling for Energy-efficient Edge-enabled LoRaWAN: Jui Mhatre and Ahyoung Lee (Kennesaw State University, USA)

Exploring Adversarial Attacks on Neural Networks: An Explainable Approach: Justus Renkhoff, Wenkai Tan, Yongxin Liu and Houbing H Song (Embry-Riddle Aeronautical University, USA); Alvaro Velasquez (Air Force Research Laboratory, USA); William Wang (Purdue University, USA); Jian Wang (The University of Tennessee at Martin & Embry-Riddle Aeronautical University, USA); Shuteng Niu (Bowling Green State University, USA); Lejla Fazlic and Guido Dartmann (Trier University of Applied Sciences, Germany)\

Performance Evaluation of Resource Management Schemes for Cloud Native Platforms with Computing Containers: Yuqi Fu, Naseem Machlovi and Ying Mao (Fordham University, USA); Jiayin Wang (Montclair State University, USA); Long Cheng (North China Electric Power University, China); Qingzhi Liu (Wageningen University, The Netherlands)

Performance Evaluation of an Out-of-Order RISC-V CPU: A SPEC INT 2017 Study: Amin Sarihi and Abdel-Hameed A Badawy (New Mexico State University, USA); Michael A Schoenfelder (SiFive, USA)

DeepThrottle: Deep Reinforcement Learning for Router Throttling to Defend Against DDoS Attack in SDN: Shuhan Che, Yi Shen and Chunming Wu (Zhejiang University, China); Congqi Shen (ZheJiang Lab, China)

*Denotes Short Paper

IPCCC 2022 Day Two ▪ Saturday, November 12TH

▪ Registration Opens: 08:30 CST ▪

Session 2.1A: Machine Learning (Virtual)

07:30-09:00 CST ▪ Chair: Neil Nelson

[Zoom A Link: tinyurl.com/IPCCC2022-ZoomA | Code: ipccc2022]

LSEGNN: Encode Local Topology Structure in Graph Neural Networks: Ming Xu, Baoming Zhang, Meng Cao, Hualei Yu and Chong-Jun Wang (Nanjing University, China)

KylinTune: DQN-based Energy-efficient Model for Browser in Mobile Devices: Hao Xu, Long Peng, Xiaodong Liu, Menglin Zhang, Jun Ma and Jie Yu, Zibo Yi (National University of Defense Technology, China)

*__An Enhanced Representation Method for Pedestrian Trajectory Prediction Based on Adaptive GCN:__ Lizong Zhang, Yutao Jiang, Bei Hu, Zhe Liu and Guisong Liu (University of Electronic Science and Technology of China, China)

*__MFIP: Multi-Factor Interlinked Point-of-Interest Recommendation in Location-Based Social Network:__ Qiaojie Lu, Nan Wang and Kun Li (Heilongjiang University, China)

*__Video Traffic Identification with a Distribution Distance-based Feature Selection:__ Shuaili Liu, Licheng Zhang, Peifa Sun, Yingshuo Bao and Lizhi Peng (University of Jinan, China)

*__A Scalable Nested Blockchain Framework with Dynamic Node Selection Approach for IoT:__ Xiaofeng He, Yuchao Zhang and Xiaotian Wang (Beijing University of Posts and Telecommunication, China)

Empirical Estimation of ETSI ITS-G5 Performance Over an IPv6-based Platform: Ashkan Gholamhosseinian, Jochen Seitz (Ilmenau Technical University, Germany)

Session 2.1B: Cloud and Edge Computing (Virtual)

07:30-09:00 CST ▪ Chair: Xiuzhen (Susan) Cheng

[Zoom B Link: tinyurl.com/IPCCC2022-ZoomB | Code: ipccc2022]

A Secure and Efficient Data Deduplication Scheme with Dynamic Ownership Management in Cloud Computing: Ma Xuewei, Wenyuan Yang, Yuesheng Zhu and Zhiqiang Bai (Peking University, China)

SMPI: Scalable Serverless MPI Computing: Yuxin Yuan, Xiao Shi, Zhengyu Lei, Xiaohong Wang and Xiaofang Zhao (Chinese Academy of Sciences, China)

HRCache: Edge-end Collaboration for Mobile Deep Vision Based on H.264 and Approximated Reuse: Xiaohui Wei, Xiukun Wei, Xingwang Wang, Yundi Wang and Yan Niu (Jilin University, China)

FedMC: Federated Reinforcement Learning on the Edge with Meta-critic Networks: Derun Zou, Jianhui Duan, Ruichen Li, Yeting Xu, Wenzhong Li and Sanglu Lu (Nanjing University, China); Xusheng Liu and Lintan Sun (State Grid Corporation of China, China)

Keep Clear of the Edges: An Empirical Study of Artificial Intelligence Workload Performance and Resource Footprint on Edge Devices: Kun Suo, Tu N. Nguyen, Yong Shi, Jing He and Chih-Cheng Hung (Kennesaw State University, USA)

*__Energy Efficiency on Edge Computing: Challenges and Vision:__ Tyler Holmes, Charlie McLarty, Yong Shi, Patrick Bobbie and Kun Suo (Kennesaw State University, USA)

*__Pricing in the Open Market of Crowdsourced Video Edge Caching: A Newcomer Perspective:__ Xueqing Wang, Liang Wan, Zhiwen Yu, Yao Zhang and Weibo Chu (Northwestern Polytechnical University, China); Zichuan Xu (Dalian University of Technology, China)

*__Cross-domain Resemblance Detection Based on Meta-learning for Cloud Storage:__ Baisong Li, Wenlong Tian, Zhongming Fu, Xuming Ye, Renjiao Duan and Yusheng Li (University of South China, China); Ruixuan Li (Huazhong University of Science and Technology, China); Weijun Xiao (Virginia Commonwealth University, USA); Zhiyong Xu (Suffolk University, USA)

Break: 09:00-09:30

Session 2.2 Best Paper Candidates – 09:30-10:30 CST ▪ Chair: Gürkan Solmaz [Room 400]

[Zoom C Link: tinyurl.com/IPCCC2022-ZoomC | Code: ipccc2022]

An Abnormal Traffic Detection Method for IoT Devices Based on Federated Learning and Deep Separable Convolutional Neural Network: Qinyu Xia (Wuhan Textile University, China); Shi Dong (Zhoukou Normal University, China)

PickyMan: A Preemptive Scheduler for Deep Learning Jobs on GPU Clusters: Chen Chen, Yingwen Che, Zhaoyun Chen and Jianchen Han (National University of Defense Technology, China); Guangtao Xue (Shanghai Jiao Tong University, China)

Break: 10.30-10.45

Session 2.3: 40th Anniversary - Former IPCCC Chairs Panel Session

10:45-12:00 CST ▪ Moderator: Nasr Ullah

Dr. Richard Oliver, Formerly University of New Mexico
Dr. Song Fu, University of North Texas
Dr. Guoliang (Larry) Xue, Arizona State University
Dr. Yu Wang, Temple University
Dr. Roy Jenevein, Formerly University of Texas at Austin
Dr. Abdel-Hameed Badawy, New Mexico State University
Dr. Linda Wilson, Texas Lutheran University
Dr. Jo Dale Carothers, Weintraub IP Group
Dr. Jeff Rodriguez, University of Arizona
Dr. Golden Richard, Louisiana State University

Lunch: 12:00-13:30 (The Reverbery)

Session 2.4: System Optimization – 13:30-15:00 CST ▪ Chair: Roy Jenevein [Room 400]

*__MARS: Malleable Actor-critic Reinforcement Learning Scheduler:__ Betis Baheri, Qiang Guan and Jacob Tronge (Kent State University, USA); Bo Fang and Ang Li (Pacific Northwest National Laboratory, USA); Vipin Chaudhary (Case Western Reserve University, USA)

*__NOMA-based Power Control for Machine-Type Communications: A Mean Field Game Approach:__ Amani Benamor (University of Sfax, Tunisia); Oussama Habachi (Laboratory of Informatics, Modeling and Optimization of the Systems, France); Ines Kammoun (National Engineering School of Sfax & University of Sfax, Tunisia); Jean Pierre Cances (University of Limoges, France)

*__Optimal Incentive Mechanisms for Fair and Equitable Rewards in PoS Blockchains:__ Abdulhadi Sahin, Kemal Akkaya and Sukumar Ganapati (Florida International University, USA)

*__Iterative Qubits Management for Quantum Index Searching in a Hybrid System:__ Wenrui Mu and Ying Mao (Fordham University, USA); Long Cheng (North China Electric Power University, China); Qingle Wang (Louisiana State University, USA); Weiwen Jiang (George Mason University, USA); Pin-Yu Chen (IBM Research, USA)

Break: 15:00-15:30

Session 2.5: Cloud and Edge Computing – 15:30-16:30 CST ▪ Chair: Ningfang Mi [Room 400]

Higher-order Markov Graph based Bug Detection in Cloud-based Deployments: Qing Cao and Haoran Niu (University of Tennessee, USA)

*__PECS: A Pareto-Efficient and Envy-free Cloud Resource Scheduler:__ Qing Cao (University of Tennessee, USA); Weisheng Si (Western Sydney University, Australia)

*__D2FO: Distributed Dynamic Offloading Mechanism for Time-sensitive Tasks in Fog-cloud IoT-based Systems:__ Ismail Atai, Tania Taami, Md Mainuddin and Daniel Schwartz (Florida State University, USA); Sadoon Azizi (University of Kurdistan, Iran)

*Denotes Short Paper

• Esther's Follies Comedy Show 21:00-22:30 - 525 E. Sixth Street •

IPCCC 2022 Day Three ▪ Sunday, November 13TH

▪ Registration Closed ▪

Session 3.1: Machine Learning

08:15-10:00 CST ▪ Chair: Nils Aschenbruck [Room 400]

Reinforced Contrastive Graph Neural Networks (RCGNN) for Anomaly Detection: Zenan Sun, Jingyi Su, Donghyun Jeon and Shuteng Niu (Bowling Green State University, USA); Alvaro Velasquez (Air Force Research Laboratory, USA); Houbing H Song (Embry-Riddle Aeronautical University, USA)
PaWLA: PPG-based Weight Lifting Assessment: A B M Mohaimenur Rahma, Pu Wang and Weichao Wang (University of North Carolina at Charlotte, USA); Yu Wang (Temple University, USA)
*__Deep Convolutional Autoencoder for Energy-efficient Smart Health Wearables In the Era of Big Data:__ Qingxue Zhang (Purdue University School of Engineering and Technology, USA)
*__Digital Twin in Safety-critical Robotics Applications: Opportunities and Challenges:__ Sabur Baidya, Sumit Das, Mohammad Helal Uddin, Chase Kosek and Chris Summers (University of Louisville, USA)
*__Reshi: Recommending Resources For Scientific Workflow Tasks on Heterogeneous Infrastructures:__ Jonathan Bader, Alexander Groth, Dominik Scheiner, Jonathan Will and Odej Kao (Technical University of Berlin, Germany); Fabian Lehmann and Ulf Leser (Humboldt University of Berlin, Germany); Lauritz Thamsen (University of Glasgow, UK)

Break: 10:00-10:30

Session 3.2: Network Security and Privacy

10:30 -11:30 CST ▪ Chair: Roy Jenevein [Room 400]

APEX: Characterizing Attack Behaviors from Network Anomalies: Kushan Sudheera Kalupahana Liyanage (University of Ruhuna & Nanyang Technological University, Singapore); Zixu Tian, Mun Choon Chan and Mohan Gurusamy (National University of Singapore, Singapore); Dinil Mon Divakaran (Trustwave, Singapore)
*__Phishing Detection Based on Multi-feature Neural Network:__ Shuaicong Yu, Changqing An, Ziyi Zhao and Jilong Wang (Tsinghua University, China); Tao Yu (Tsinghua University & Network, China); Tianshu Li (University of Toronto, Canada)
*__Unsupervised Anomaly Detection in RS-485 Traffic Using Autoencoders with Unobtrusive Measurement:__ Pawissakan Chirupphapa, Hiroshi Esaki and Hideya Ochiai (The University of Tokyo, Japan); Md Delwar Hossain (Nara Institute of Science and Technology, Japan)

▪ End of IPCCC 2022 Conference ▪

IPCCC 2022 Virtual Sessions: Zoom Links and Shortcuts + Passcode

Friday, November 11TH

Session 1.2A: Network Optimization, Security & Privacy ▪ 17:00 CST
Full Link: https://us06web.zoom.us/j/82832084249?pwd=WS9HNE9PQ1d1dlgvcjlZeDlac1puUT09
Shortcut Link: https://tinyurl.com/IPCCC2022-ZoomA
Passcode: ipccc2022

Session 1.2B: System Optimization ▪ 17:00 CST
Full Link: https://us06web.zoom.us/j/86568163458?pwd=bnpxYVVxR2ZRa3lpREd6N3pLWEQ0QT09
Shortcut Link: https://tinyurl.com/IPCCC2022-ZoomB
Passcode: ipccc2022

Saturday, November 12TH

Session 2.1A: Machine Learning ▪ 07:30 CST
Full Link: https://us06web.zoom.us/j/82832084249?pwd=WS9HNE9PQ1d1dlgvcjlZeDlac1puUT09
Shortcut Link: https://tinyurl.com/IPCCC2022-ZoomA
Passcode: ipccc2022

Session 2.1B: Cloud and Edge Computing ▪ 07:30 CST
Full Link: https://us06web.zoom.us/j/86568163458?pwd=bnpxYVVxR2ZRa3lpREd6N3pLWEQ0QT09
Shortcut Link: https://tinyurl.com/IPCCC2022-ZoomB
Passcode: ipccc2022

Session 2.2: Best Paper Candidates ▪ 09:30 CST
Full Link: https://us06web.zoom.us/j/85089801483?pwd=NXhvS2JTZTlFMkdEZG11T3U3akdEUT09
Shortcut Link: https://tinyurl.com/IPCCC2022-ZoomC
Passcode: ipccc2022

JOIN US FOR IPCCC 2023

November-December 2023
San Diego/Anaheim, California, USA
Paper Abstract Due: June 15th, 2023
Full Paper Due: June 30th, 2023
Acceptance Notification: August 15th, 2023
Camera Ready Due: August 30th, 2023

For Conference Details as They Become Available Please Check IPCCC.ORG

*Denotes Short Paper

IPCCC 2022: Keynote Speaker

AI-Based Control and Orchestration in the Open RAN: Architectures, Algorithms, Testbeds

Tommaso Melodia
(William Lincoln Smith Professor at Northeastern University)

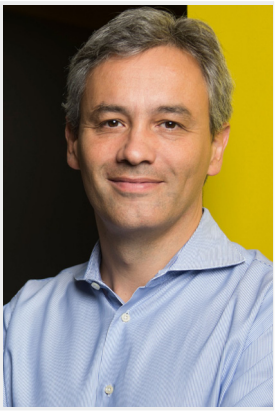
Friday, November 11TH ▪ 14:00-15:15 CST

ABSTRACT

This talk will present an overview of our work on laying the basic principles to design open, programmable, AI-driven, and virtualized next-generation wireless networks. We will cover in detail challenges and opportunities associated with the evolution of cellular systems into cloud-native softwarized architectures enabling fine grained control of end-to-end functionalities.

BIOGRAPHY

Tommaso Melodia is the William Lincoln Smith Professor with the Department of Electrical and Computer Engineering at Northeastern University in Boston. He is also the Founding Director of the Institute for the Wireless Internet of Things and the Director of Research for the Platforms for Advanced Wireless Research (PAWR) Project Office. He received his Laurea (integrated BS and MS) from the University of Rome - La Sapienza and his Ph.D. in Electrical and Computer Engineering from the Georgia Institute of Technology in 2007. He is an IEEE Fellow and recipient of the National Science Foundation CAREER award. Professor Melodia is serving as Editor in Chief for Computer Networks, and has served as Associate Editor for IEEE Transactions on Wireless Communications, IEEE Transactions on Mobile Computing, IEEE Transactions on Multimedia, among others. He was the Technical Program Committee Chair for IEEE Infocom 2018, and General Chair for ACM MobiHoc 2020, IEEE SECON 2019, ACM Nanocom 2019, and ACM WUWNet 2014. Prof. Melodia's research on modeling, optimization, and experimental evaluation of Internet-of-Things and wireless networked systems has been funded by the US National Science Foundation, several industrial partners, the Air Force Research Laboratory Office of Naval Research, DARPA, and the Army Research Laboratory.



Further information: https://ece.northeastern.edu/wineslab/

IPCCC 2022 Sponsors

IPCCC 2022 Would Like to Thank Our Conference Sponsors for Supporting this Forum for Academic, Industrial and Government Researchers

IEEE
Institute of Electrical and Electronics Engineers

IEEE COMPUTER SOCIETY
IEEE Computer Society

IPCCC.ORG

Preliminary Call for Papers and Participation for November-December 2023

42nd IEEE Performance, Computing and Communications Conference

November-December 2023
San Diego/Anaheim, California, USA

Sponsored by the IEEE Computer Society

The International Performance, Computing, and Communications Conference is the premier IEEE conference presenting research in the performance of computer and communication systems. For over four decades, IPCCC has been a research forum for academic, industrial and government researchers. We encourage submissions of high-quality papers, posters and workshop papers reporting original work in both theoretical and experimental research areas.

IPCCC BOARD
(Steering Committee)

Hot Topics For IPCCC 2023

Topics of interest include, but are not limited to the following:

- Big Data Processing and Analytics
- Cache, Memory, and Disk Storage Systems
- Cloud Computing
- Crowdsourcing Systems
- Cyber Physical Systems
- Data Centers
- Embedded Systems
- Fundamental Theory and Algorithms
- Internet of Things
- Internet Services and Network Management
- Mobile Ad Hoc, Sensor and Mesh Networks
- Multimedia Networking
- Many-core and Heterogeneous Computing
- Network Data Mining
- Network Information Assurance and Security
- Network Protocols
- Online Social Network Analysis
- Parallel and Distributed Systems
- Performance Evaluation and Modeling
- Security and Privacy
- Smart Grid and Intelligent Mission Critical Operations
- Smart Health Systems, Wearable, and Implantable Systems
- Smartphone and Mobile Applications
- Software Defined Networking
- Ubiquitous Computing
- Wireless Communication and Networks
- Workload Characterization and its Impacts on Architecture Design

For Details and Questions Regarding Paper Submissions
Please See the Latest IPCCC 2022 Information at www.ipccc.org