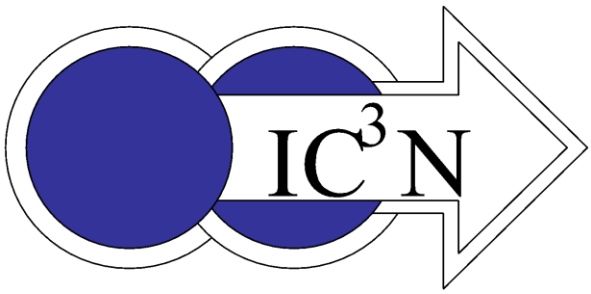
ICCCN 2022

The 31st International Conference on Computer Communications and Networks

July 25 – July 27, 2022

Final Program

(Virtual Conference)



ICCCN 2022 Conference Program Overview

July 25 (Monday), 2022
All times listed in USA, Eastern Time.

9:45	Registration Open		
10:00-10:30	**Opening Remarks** (Room 1)		
10:30-11:30	**Keynote I (Dr. Bhaskar Krishnamachari)** **Blockchain Technology and its applications to the Internet of Things** Room 1		
11:30-11:45	Coffee break		
11:45-13:30	Session 1 CAAME (Room 1)	Session 2 IoT (Room 2)	Invited 1 Learning/Automation (Room 3)
13:30-14:00	Coffee break		
14:00-15:30	**Panel I (Hype and Promise of AI in Networking, Moderator: Dr. Mudhakar Srivatsa)** Room 1		
15:30-15:45	Coffee break		
15:45-17:10	Session 3 AIETN (Room 1)	Session 4 SDN/NFV (Room 2)	Invited 2 Security (Room 3)

July 26 (Tuesday), 2022
All times listed in USA, Eastern Time.

9:45	Registration Open		
10:00-11:00	**Keynote II (Dr. Tommaso Melodia)** **AI-based Control and Orchestration in the Open RAN: Architectures, Algorithms, Testbeds** Room 1		
11:00-11:15	Coffee break		
11:15-13:00	Session 5 MECC	Session 6 SPTI1	Invited 3 Optimization

	(Room 1)	(Room 2)	(Room 3)
13:00-13:30	Coffee break		
13:30-15:00	**Panel II (Future of Computer Communications and Networks: Trends and Directions, Moderator: Dr. Erik Brunvand)** Room 1		
15:00-15:15	Coffee break		
15:15-17:00	Session 7 SPTI2 (Room 1)	Session 8 AMCN (Room 2)	Invited 4 Future Internet (Room 3)
July 27 (Wednesday), 2022 ***All times listed in USA, Eastern Time.***			
9:45	Registration Open		
10:00-11:00	**Keynote III (Dr. Keren Bergman)** **Deeply Disaggregated Data Center Architectures with Petabit-scale Embedded Photonics** **Room 1**		
11:00-11:15	Coffee break		
11:15-13:00	Session 9 Posters (Room 1)	N2Women Event (Room 2)	

ICCCN 2022 Conference Technical Program

July 25 (Monday)

All times listed in USA, Eastern Time.

10:30-11:30

Keynote I: Blockchain Technology and its applications to the Internet of Things

Speaker: Dr. Bhaskar Krishnamachari, University of Southern California, USA
Chair: Prof. George Rouskas, North Carolina State University, USA

11:45-13:30

Session 1: Communication Networks Architectures, Algorithms, Measurement and Performance Evaluation (CAAME)

Chair: Guoliang Xue, Arizona State University, USA
Email: xue@asu.edu

- Junyang Shi and Mo Sha,
  Localizing Campus Shuttles from One Single Base Station Using LoRa Link Characteristics
- Zhewei Tang, Tong Zhang and Kun Zhu,
  ORSM: Online Routing and Scheduling Mechanism for Mix-flows in Data Center Networks
- Fangping Lan, Sanchari Biswas, Bin Gui, Jie Wu and Anduo Wang,
  Design and Implementation of a Strong Representation System for Network Policies
- Jie Chen, Dibyajyoti Guha, Abhijit Dutta Banik and Biplab Sikdar,
  Delay and Power Consumption Analysis for Queue State Dependent Service Rate Control in TDMA Network
- Ziad Kassam, Paulo Sérgio Almeida and Ali Shoker,
  Exon: An Oblivious Exactly-Once Messaging Protocol

Session 2: Internet of Things (IoT)

Chair: Nitin Auluck, Indian Institute of Technology Ropar, India
Email: nitin@iitrpr.ac.in

- Purboday Ghosh, Shashank Shekhar, Yashen Lin, Ulrich Muenz and Gabor Karsai,
  Peer-to-Peer Communication Trade-Offs for Smart Grid Applications
- Prasesh Adina and Muhammad Shahzad,
  A Distributed & Lightweight Framework to Secure IoT Networks Against Network Layer Attacks
- Hui Zhuang, Tao He, Qun Niu and Ning Liu,
  Efficient Indoor Localization with Multiple Consecutive Geomagnetic Sequences
- Samir Si-Mohammed, Thomas Begin, Isabelle Guérin Lassous and Pascale Vicat-Blanc Introducing ADIperf, a Framework forApplication-driven IoT Network Performance Evaluation
- Yucheng Xie, Ruizhe Jiang, Xiaonan Guo, Yan Wang, Jerry Cheng and Yingying Chen,
  mmFit: Low-Effort Personalized Fitness Monitoring Using Millimeter Wave

Invited Session 1: Learning/Automation

Chair: Yipeng Wang, Beijing University of Technology, China
Email: yipeng.wang1@gmail.com

- Zewen Huang, Kui Wu, Shengqiang Huang, Yang Zhou and Ronnie Salvador Giagone,
  Automatic Field Extraction of Extended TLV for Binary Protocol Reverse Engineering
- Khandaker Mamun Ahmed, Samuel Muvdi, Jason Liu and M. Hadi Amini,
  A Federated Learning Framework for Automated Decision Making with Microscopic Traffic Simulation
- Stuart Baxley, Deniz Gurkan, Hamidreza Validi and Illya Hicks,
  Graph Representation of Computer Network Resources for Precise Allocations

- Tripti Samal, Rudra Dutta, Ismail Guvenc, Mihail Sichitiu, Brian Floyd and Thomas Zajkowski,
  Automating Operator Oversight in an Autonomous, Regulated, Safety-Critical Research Facility
- Yacine Ghamri-Doudane, Halima El Biaze, Wessam Adjib, Ozgur Ercetin and Roch Glitho,
  SCORING: Towards Smart Collaborative cOmputing, caching and netwoRking paradIgm for Next Generation communication infrastructures

14:00-15:30

Panel I: Hype and Promise of AI in Networking

Chair: Dr. Mudhakar Srivatsa, IBM, USA
Speakers:
Dr. Tarek Abdelzaher, University of Illinois Urbana-Champaign, USA
Dr. Bharathan Balaji, Amazon Sustainability, USA
Dr. Peter Kairouz, Google Research, USA
Dr. Zhi-Li Zhang, University of Minnesota Twin Cities, USA

15:45-17:10

Session 3: AI and Emerging Networking Technologies (AIETN)

Chair: Kui Wu, University of Victoria, Canada
Email: wkui@uvic.ca

- Wenxu Jia, Yipeng Wang, Yingxu Lai, Huijie He and Ruiping Yin,
  FITIC: A Few-shot Learning Based IoT Traffic Classification Method
- Ying Li, Changling Li, Jiyao Chen and Christine Roinou,
  Energy-Aware Multi-Agent Reinforcement Learning for Collaborative Execution in Mission-Oriented Drone Networks
- Luis Felipe Florenzan Reyes, Francesco Smarra, Roland Ryf, Tetsuya Hayashi, Andrea Marotta, Cristian Antonelli and Alessandro D'Innocenzo,
  Data-driven efficient digital signal processing over a field trial space-division multiplexed fiber-optic transmission
- Weixiang Chen, Bo Gu, Xiaojun Tan and Chenhua Wei,
  Radio Resource Selection in C-V2X Mode 4: A Multiagent Deep Reinforcement Learning Approach

Session 4: SDN/NFV

Chair: Laaziz Lahlou, École de technologie supérieure, Canada
Email: laaziz.lahlou.1@etsmtl.net

- Enrique Rodicio, Deng Pan, Jason Liu and Bin Tang,
  Achieving High End-to-End Availability in VNF Networks
- Aixin Xu, Shimin Sun, Ze Wang, Xiaofan Wang and Li Han,
  Multi-Controller Load Balancing Mechanism Based on Improved Genetic Algorithm
- Lucas Bréhon-Grataloup, Rahim Kacimi and André-Luc Beylot,
  Context-aware task offloading with QoS-provisioning for MEC multi-RAT vehicular networks
- Diego Oliveira Rodrigues, Torsten Braun, Guilherme Maia and Leandro Villas,
  Mobility-aware Software-defined Service-centric Networking

Invited Session 2: Security

Chair: Xiaonan Guo, Indiana University-Purdue University Indianapolis, USA
Email: xg6@iu.edu

- Arvin Hekmati, Eugenio Grippo and Bhaskar Krishnamachari,
  Neural Networks for DDoS Attack Detection using an Enhanced Urban IoT Dataset
- Haolin Tang, Salih Sarp, Yanxiao Zhao, Wei Wang and Chunsheng Xin,

Security and Threats of Intelligent Reflecting Surface Assisted Wireless Communications

- Giuseppe Tricomi, Luca D'Agati, Zakaria Benomar, Francesco Longo, Giovanni Merlino and Antonio Puliafito, Interfacing Intelligent Personal Assistant to SDI/O with one click
- Dongxin Liu, Tarek Abdelzaher, Tianshi Wang, Yigong Hu, Jinyang Li, Shengzhong Liu, Matthew Caesar, Deepti Kalasapura, Joydeep Bhattacharyya, Nassy Srour, Maggie Wigness, Jae Kim, Guijun Wang, Greg Kimberly, Denis Osipychev and Shuochao Yao,
  IoBT-OS: Optimizing the Sensing-to-Decision Pipeline for the Internet of Battlefield Things

July 26 (Tuesday)

All times listed in USA, Eastern Time.

10:00-11:00

Keynote II: AI-based Control and Orchestration in the Open RAN: Architectures, Algorithms, Testbeds

Speaker: Dr. Tommaso Melodia, Northeastern University, USA
Chair: Prof. Krishna Kant, Temple University, USA

11:15-13:00

Session 5: Mobile, Edge and Cloud Computing (MECC)

Chair: Mainak Adhikari, Indian Institute of Information Technology, Lucknow, India
Email: mainak@iiitl.ac.in

- Miguel Belém, Pedro Fouto, Taras Lykhenko, João Leitão, Nuno Preguiça and Luis Rodrigues,
  Engage: Session Guarantees for the Edge
- Caroline Rublein, Fidan Mehmeti, Taha Gunes, Sebastian Stein and Thomas La Porta,
  Scalable Resource Allocation Techniques for Edge Computing Systems
- Yujian Zhang, Mingde Li and Fei Tong,
  An Energy-Efficient Load Balancing Scheme in Heterogeneous Clusters by Linear Programming
- Simon Keller and Rainer Mueller,
  Server Workload Assignment for Real-Time Range Queries in Adaptive Quad Streaming Sensor Environments
- Changwei Wan, Songtao Guo and Yuanyuan Yang,
  Deep Reinforcement Learning Based Computation Offloading in SWIPT-assisted MEC Networks

Session 6: Security, Privacy, Trust and Incentives (SPTI-1)

Chair: Yanxiao Zhao, Virginia Commonwealth University, USA
Email: yzhao7@vcu.edu

- Nadia Niknami, Abdalaziz Sawwan and Jie Wu,
  A Defense-Attack **Game** under Multiple Preferences and Budget Constraints with Equilibrium
- Xin Xu, Wei Wang, Jingqiang Lin, Zhen Yang, Haoling Fan and Qiongxiao Wang,
  LiTIV: A Lightweight Traceable Data Integrity Verification Scheme for Version Control Systems
- Haoran Jiao, Qing Wang, Zhaoshan Fan, Junrong Liu, Dan Du, Ning Li and Yuling Liu,
  DGGCN: Dictionary based DGA detection method based on DomainGraph and GCN
- Kamrul Hasan, Sachin Shetty, Tariqul Islam and Imtiaz Ahmed,
  Predictive Cyber Defense Remediation against Advanced Persistent Threat in Cyber-Physical Systems
- Kaizhong Jin, Xiang Cheng and Yuchao Ma,
  Differentially Private Distributed Multi-Task Relationship Learning

Invited Session 3: Optimization

Chair: Ying Li, Colby College, USA
Email: yingli@colby.edu

- Tianxiang Tan, Yibo Wu, Zida Liu and Guohong Cao,
  Worker Selection for On-Demand Crowdsourcing
- Hasibul Jamil, Lavone Rodolph, Jacob Goldverg and Tevfik Kosar,
  Energy-Efficient Data Transfer Optimization via Decision-Tree Based Uncertainty Reduction
- Thilina N. Weerasinghe, Vicente Casares-Giner, Indika A. M.

Balapuwaduge, Frank Y. Li and Marius-Constantin Vochin,
A Pseudo-Bayesian Subframe based Framework for Grant-Free Massive Random Access in 5G NR Networks

- Zhongdong Liu, Bin Li, Zizhan Zheng, Y. Thomas Hou and Bo Ji,
Towards Optimal Tradeoff Between Data Freshness and Update Cost in Information-update Systems

13:30-15:00

Panel II: Future of Computer Communications and Networks: Trends and Directions

Chair: Erik Brunvand, National Science Foundation (NSF), USA
Speakers:
Dr. Brighten Godfrey, University of Illinois Urbana-Champaign, USA
Dr. Sastry Kompella, Naval Research Laboratory (NRL), USA
Dr. Seung-Jong Park, National Science Foundation (NSF), USA
Dr. Robert Ulman, Army Research Office (ARO), USA

15:15-17:00

Session 7: Security, Privacy, Trust and Incentives (SPTI-2)

Chair: Kamrul Hasan, Tennessee State University, USA
Email: mhasan1@tnstate.edu

- Li-Hsing Yang, Shin-Shan Huang, Tsai-Ling Cheng, Yi-Ching Kuo and Jian-Jhih Kuo,
Socially-aware Collaborative Defense System against Bit-Flip Attack in Social Internet of Things and Its Online Assignment Optimization
- Adam Duby, Teryl Taylor, Gedare Bloom and Yanyan Zhuang,
Evaluating Feature Robustness for Windows Malware Family Classification
- Gordon Werner and S. Jay Yang,
Discovery of Rare yet Co-occurring Actions with Temporal Characteristics in Episodic Cyberattack Streams
- Yi Qin, Tianming Zheng, Yue Wu and Futai Zou,
Tracing Tor Hidden Service Through Protocol Characteristics
- Fengjiao He, Wenchuan Yang, Baojiang Cui and Jia Cui,
Intelligent Fuzzing Algorithm for 5G NAS Protocol Based on Predefined Rules

Session 8: Ad Hoc, Mesh, and Cellular Networks (AMCN)

Chair: Krishna Kant, Temple University, USA
Email: kkant@temple.edu

- Sheng Pan, Xinming Zhang and Dan Keun Sung,
Intelligent Reflecting Surface-Aided Centralized Scheduling for mmWave V2V Networks
- Hua Wu, Chengfei Zhu, Guang Cheng and Xiaoyan Hu,
Real-time Application Identification of RTC Media Streams via Encrypted Traffic Analysis
- Qinghua Sima, Guoju Gao, He Huang, Yu-E Sun, Yang Du, Xiaoyu Wang and Jie Wu,
Multi-Armed Bandits Based Task Selection of A Mobile Crowdsensing Worker
- Shivam Garg, Nandini Venkatraman, Elizabeth Bentley and Sunil Kumar,
An Asynchronous Multi-Beam MAC Protocol for Multi-Hop Wireless Networks
- Jie Lu, Hongchang Chen and Zhen Zhang,
LUSketch: A Fast and Precise Sketch for top-k Finding in Data Streams

Invited Session 4: Future Internet

Chair: Rudra Dutta, North Carolina State University, USA
Email: rdutta@ncsu.edu

- Mert Cevik, Michael Stealey, Cong Wang, Jeronimo Bezerra, Julio Ibarra, Vasilka Chergarova, Heidi Morgan and Yufeng Xin,
  Towards Production Deployment of a SDX Control Framework
- Danyang Zheng, Chengzong Peng, Ben Wang and Xiaojun Cao,
  Towards Deterministic Fault-Tolerant Service Function Slicing in Edge Networks
- Xuanli Lin, Yinxin Wan, Kuai Xu, Feng Wang and Guoliang Xue,
  Inferring User Activities from IoT Device Events in Smart Homes: Challenges and Opportunities
- Luca Barsellotti, Faris Alhamed, Juan Jose Vegas Olmos, Francesco Paolucci, Piero Castoldi and Filippo Cugini,
  Introducing Data Processing Units (DPU) at the Edge
- James Martin, Manveen Kaur, Long Chen and Abolfazi Razi,
  Towards Connecting the Disconnected Internet

July 27 (Wednesday)

All times listed in USA, Eastern Time.

10:00-11:00

Keynote III: Deeply Disaggregated Data Center Architectures with Petabit-scale Embedded Photonics

Speaker: Dr. Keren Bergman, Columbia University, USA
Chair: Prof. Ting He, Penn State University, USA

11:15-13:00

Session 9: Posters

Chair: Muhammad Shahzad, North Carolina State University, USA
Email: mshahza@ncsu.edu

- Rhyd Lewis and Fiona Carroll,
  Exact Algorithms for Finding Fixed-Length Cycles in Edge-Weighted Graphs
- Fiona Carroll and Rhyd Lewis,
  Internet Security Aesthetics: Can internet transparency afford social trust?
- Hailu Xu,
  FLOR: A Federated Learning-based Music Recommendation Engine
- Jiacong Li, Hang Lv, Bo Lei and Yunpeng Xie,
  A Computing Power Resource Modeling Approach for Computing Power Network
- Muztaba Fuad, Debzani Deb, Brixx-John Panlaqui and Charles Mickle,
  Using RSSI to Form Path in an Indoor Space
- Marek Michalski,
  Elements of Architecture of Simulator Realized on NetFPGA10G Card
- Yi Yue, Wencong Yang, Xuebei Zhang, Rong Huang and Xiongyang Tang,
  A QoS Guarantee Mechanism for Service Function Chains in NFV-enabled Networks

N2Women Event

ICCCN 2022 Workshop Program Overview

July 27 (Wednesday), 2022 ***All times listed in USA, Eastern Time*** **Workshops**			
13:30 – 15:30	**BLESS**	**IoTSPT**	**SmartCityCom**
Closing			

Integrated ICCCN 2022 Workshop Schedule

BLESS 2022 Workshop (Virtual Room 1)

Welcome by workshop Chairs: Yu Chen (ychen@binghamton.edu) (Binghamton University, USA) and Sachin Shetty (sshetty@odu.edu) (Old Dominion University, USA)

Session Chairs: Yu Chen (ychen@binghamton.edu)

Session 1: (13:30 – 15:30)

- **VeriBlock: A Blockchain-Based Verifiable Trust Management Architecture with Provable Interactions**
  Shantanu Pal (Queensland University of Technology, Australia), Ambrose Hill (Meadow Labs), Tahiry Rabehaja (Risk Frontiers), Michael Hitchens (Macquarie University)
- **DLT-based Data Mules for Smart Territories**
  Mirko Zichichi (Universidad Politécnica de Madrid, Spain), Luca Serena (University of Bologna), Stefano Ferretti (University of Urbino), Gabriele D'Angelo (University of Bologna)
- **On the Applicability of Payment Channel Networks for Allocation of Transport Ticket Revenues**
  Matthias Grundmann, Otto von Zastrow-Marcks, Hannes Hartenstein (Karlsruhe Institute of Technology)
- **Distributed Ledgers for Enhanced Machine-to-Machine Trust in Smart Cities**
  Cameron Hickert, Ali Tekeoglu, Joseph Maurio, Tamim Sookor, Daniel Syed, Ryan Watson, Jeffrey Chavis, Gill Brown (Johns Hopkins University Applied Physics Laboratory)

IoTSPT 2022 Workshop (Virtual Room 2)

Welcome by workshop Chairs: Geetha Thamilarasu (University of Washington Bothell, USA) and Abhishek Parakh (University of Nebraska at Omaha, USA)

Session Chairs: Geetha Thamilarasu (geetha@uw.edu) (University of Washington Bothell, USA) and Abhishek Parakh (University of Nebraska at Omaha, USA)

Session 1: (13:30 – 15:30)

- **Evolved IoT Malware Detection using Opcode Category Sequence through Machine Learning**
  Donghoon Kim (Arkansas State University), Doosung Hwang, Sunghyun Moon (Dankook University), Youngho Kim (GI VITA), Hyunjong Lee (KSign)
- **Using Markov Chain Monte Carlo Algorithm for Sampling Imbalance Binary IDS Datasets**
  Najmeh Abedzadeh, Matthew Jacobs (Catholic University of America)
- **A Democratically Anonymous and Trusted Architecture for CTI Sharing using Blockchain**
  Shantanu Pal, Kealan Dunnett (Queensland University of Technology), Zahra Jadidi (Griffith University), Guntur Dharma Putra (University of New South Wales), Raja Jurdak (Queensland University of Technology)
- **PPAS: Privacy-preserving Resource Discovery for Multi-domain SFC orchestration**
  Neha Joshi, Rishabh Kumar, A Antony Franklin (Indian Institute of Technology, Hyderabad), Abhishek Thakur, N. V. Narendra Kumar (IDRBT, Hyderabad)

SmartCityCom 2022 Workshop (Virtual Room 3)

Welcome by workshop Chairs: : Shuhui Yang (Purdue University Northwest, USA) and **Besma Smida (University of Illinois at Chicago, USA)**

Session 1: (13:30 – 15:30)

Session Chair: Shuhui Yang (yangshuhui@gmail.com) (Purdue University Northwest, USA)

- **Optimization of Wireless Power Transfer for Wireless-Powered Mobile Edge Computing**
  Xiaogang Dong, Zheng Wan (Jiangxi University of Finance and Economics), Changshou Deng (Jiujiang University)
- **An ICN-based Secure Task Cooperation Scheme in Challenging Wireless Edge Networks**
  Ningchun Liu, Shuai Gao (Beijing Jiaotong University), Teng Liang (Peng Cheng Laboratory), Xindi Hou (Beijing Jiaotong University), Sajal K. Das (Missouri University of Science & Technology)
- **A Secure Dynamic Edge Resource Federation Architecture for Cross-Domain IoT Systems**
  Yu Chen, Ronghua Xu, Xiaohua Li (Binghamton University), Erik Blasch (AFOSR)

- **R^2P^3: Renewal-Reward Process-Based Password Protection in Internet of Things**
  Yalong Wu, Thomas Neumann, Kyle Welsh, Caden Perez (North Central College), Kewei Sha (University of Houston--Clear Lake)
- **Performance Evaluation of Low-Latency Live Streaming of MPEG-DASH UHD video over Commercial 5G NSA/SA Network**
  Kasidis Arunruangsirilert , Bo Wei, Jiro Katto (Waseda University), Hang Song (The University of Tokyo)
- **Security of Machine Learning-Based Anomaly Detection in Cyber Physical Systems**
  Shantanu Pal, Zahra Jadidi, Nithesh Nayak K, Arawinkumaar Selvakkumar, Chih-Chia Chang (Queensland University of Technology), Maedeh Beheshti (Critical Path Institute), Alireza Jolfaei (Macquarie University)

Closing

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