IEEE 2021 CIC/COGMI/TPS JOINT CONFERENCES

VIRTUAL CONFERENCE DEC 13-15

CONFERENCE PROGRAM

Version
Dec 12, 2021

Useful Resources

Slack Workspace – https://join.slack.com/t/ieeecictpscogmi2021/shared_invite/zt-10ac257u9-sJNc8fnaPCyFQjWpkczSVA

Conference Website
- CIC: http://www.sis.pitt.edu/lersais/conference/cic/2021/
- TPS: http://www.sis.pitt.edu/lersais/conference/tps/2021/
- CogMI: http://www.sis.pitt.edu/lersais/conference/cogmi/2021/

Conference Program with Zoom links –
https://www.sis.pitt.edu/lersais/conference/common/resources/2021_program_overview-zoom.pdf

Conference App – Select IEEE CIC TPS CogMI 2021

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Android -
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IEEE 2021 CIC/CogMI/TPS Joint Conferences

Overview Day 1: Monday, Dec. 13, 2021

8:00am-8:30am	**Opening** (PC Chairs)			
8:30am-10:30am	**CIC Vision 1** (Australia) *Session Chair* **Amir Masoumzadeh**, University at Albany – SUNY, USA	**CogMI Vision 1** (Asia) *Session Chair* **Latifur Khan**, University of Texas at Dallas, USA	**TPS Vision 1** *Session Chair* **Suryadipta Majumdar,** Concordia University, Canada	
	Break			
10:40am-11:40am	**Keynote 1** **Real-Time Edge AI** **Tarek Abdezaher**, *University of Illinois Urbana-Champaign, USA* Session Chair: **Ling Liu,** Georgia Tech, USA			
	Lunch Break			
12:10pm–1:40pm	**Panel 1** **Post-Quantum Security** Panelists (Last Name Alphabetical) **Craig Costello**, *Microsoft Research in Redmond, USA* **Vadim Lyubashevsky**, *IBM Research Europe – Zurich, Switzerland* **Bing Qi**, *Cisco, USA* **Michele Mosca**, *University of Waterloo, Canada* Panel Moderator/Session Chair **Ashish Kundu**, Cisco, USA			
	Break			
1:50pm–2:50pm	**Keynote 2** **Enabling a rich and trustworthy nexus of AI and IoT** **Mani Srivastava**, *University of California, Los Angeles, USA* Session Chair: **Tarek Abdezaher,** *University of Illinois Urbana-Champaign, USA*			
	Break			
3:00pm-4:00pm	**Keynote 3** **Powering a quantum future through quantum circuits** **Jerry M. Chow**, *IBM Quantum, T. J. Watson Research Center, USA* Session Chair: **Ashish Kundu,** Cisco, USA			
	Break			
4:10pm-6:10pm	**TPS Vision 2** *Session Chair* **Lorenzo De Carli**, Worcester Polytechnic Institute, USA	**TPS Vision 3** *Session Chair* **Surya Nepal**, Data61/CSIRO, Australia	**CogMI Research Session 1** *Session Chair* **Haiying Shen**, University of Virginia, USA	**CogMI Special Session - Intelligent Cyber-physical Systems 1** *Session Chair* **Ting He**, Pennsylvania State University, USA	**TPS Research Session 1** *Session Chair* **Indrakshi Ray**, Colorado State University, USA

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Overview Day 2: Tuesday, Dec. 14, 2021

8:30am-10:30am	**TPS Vision 4** *Session Chair* **Wei-Shinn Ku**, NSF And Auburn University, USA	**CogMI Research Session 2** *Session Chair* **Yanbing Mao**, University of Illinois, USA	**CIC Vision 2** *Session Chair* **Panos Chrysanthis**, University of Pittsburgh, USA	**TPS Research Session 2** *Session Chair* **Murat Kantarcioglu**, University of Texas at Dallas, USA
	Break			
10:40am-11:40am	**Keynote 4** **Network Analysis and Mining: Yesterday, today, tomorrow & beyond** **Paolo Boldi**, *University of Milano, Italy* Session Chair: **Barbara Carminati**, University of Insubria, Italy			
	Break			
11:45 am-12:45 pm	**Keynote 5** **Towards Safety and Security in Socio-Cyber-Physical Systems** **Naira Hovakimyan**, *University of Illinois Urbana-Champaign, USA* Session Chair: **Huan Liu,** Arizona State University, USA			
	Break			
12:50 pm-1:50 pm	**Keynote 6** **On Deploying Secure Computation Protocols in Daily Business Applications** **Moti Yung**, *Google, USA* Session Chair: **Surya Nepal,** Data61/CSIRO, Australia			
1:50pm-3:50pm	**TPS Special Session – Agriculture Cybersecurity 1** *Session Chair* **Surya Nepal**, CSIRO's Data61/Cyber Security CRC, Australia **Helge Janicke**, *Cyber Security CRC/ECU, Australia*	**CIC Research Session 1** *Session Chair* **Maanak Gupta**, Tennessee Tech University, USA	**CogMI Vision 2** *Session Chair* **Huajie Shao**, William and Mary, USA	**TPS Application Session 1** *Session Chair* **TBD**
	Break			
4:00pm – 5:00 pm	**TPS Special Session Keynote – Agriculture Cybersecurity** **Cybersecurity in agriculture and food systems** **Molly Jahn**, *Defense Advanced Research Projects Agency, USA* Session Chair: **Helge Janicke**, *Cyber Security CRC/ECU, Australia*	**CogMI Special Session - Intelligent Cyber-physical Systems 2** *Session Chair* **Raghu Ganti**, IBM Research, USA		**CogMI Research Session 3** *Session Chair* **Kasthuri Jayarajah**, University of Maryland Baltimore County, USA
5:00 – 6:00 pm	**TPS Special Session – Agriculture Cybersecurity 2** *Session Chair* **Surya Nepal**, CSIRO's Data61/Cyber Security CRC, Australia **Helge Janicke**, *Cyber Security CRC/ECU, Australia*			
6:00 – 7:00 pm		**Tutorial 1** **Can federated learning solve our data privacy problems? State of the art and open challenges** Nathalie Baracaldo, *IBM Almaden Research Center, USA* Session Chair: **Indrakshi Ray**, Colorado State University, USA		

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Overview Day 3: Wednesday, Dec. 15, 2021

8:30am-10:30am	**TPS Research Session 3** *Session Chair* **Hossein Shirazi**, Colorado State University, USA	**CogMI Vision 3 (EU)** *Session Chair* **Adrienne Raglin**, DEVCOM Army Research Laboratory, USA	**TPS Vision 5** *Session Chair* **Murat Kantarcioglu**, University of Texas at Dallas, USA	**CIC Research Session 2** *Session Chair* **Smriti Bhatt**, Purdue University, USA
	Lunch Break			
11:00 am-12:00 pm	**Keynote 7** **How Technology Will Dictate Our Civic Future** **Latanya Sweeney**, *Harvard University, USA* Session Chair: **Murat Kantarcioglu,** University of Texas at Dallas			
	Break			
12:10pm-1:10pm	**Keynote 8** **Orchestrating Change with Disinformation and Influence** **Kathleen Carley**, *Carnegie Mellon University, USA* Session Chair: **Huan Liu**, Arizona State University			
	Break			
1:30pm-3:00pm	**Panel 2** **Privacy and Fairness** Panelists (Last Name Alphabetical) **Rachel Cummings**, *Columbia University, USA* **Murat Kantarcioglu**, *University of Texas at Dallas, USA* **Ling Liu**, *Georgia Institute of Technology, USA* **Gerome Miklau**, *University of Massachusetts, Amherst, and Tumult Labs, USA* **Vivek Singh**, *Rutgers University, USA* Panel Moderator/Session Chair **Jaideep Vaidya**, Rutgers University, USA			
	Break			
3:10pm-4:40pm	**Panel 3** **Pandemic 2023 – An Information Technology Retrospective** Panelists (Last Name Alphabetical) **Ritwik Banerjee**, *Stony Brook University, USA* **Calton Pu**, *Georgia Institute of Technology, USA* **Ramesh Raskar**, *MIT Media Lab, USA* **Nalini Venkatasubramanian**, *University of California, Irvine, USA* Panel Moderator/Session Chair **Indrajit Ray**, Colorado State University, USA			
	Break			
4:50pm – 5:20pm	**Best Paper Awards and Closing Remarks**			

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Day 1: Monday, Dec. 13, 2021

Welcome and Opening Remarks

8:00 am – 8:30 am
Zoom Link: https://zoom.us/j/98450113623?pwd=SHhUS1NNaUs0Wno0eWV1azQyVDBLZz09
All Chairs

CIC Vision Session 1:

8:30 am – 10:30 am
Zoom Link: https://zoom.us/j/96067932257?pwd=Y00xV25teWFRK2ZOSmxucTEwYlZTQT09
Session Chair: **Amir Masoumzadeh**, University at Albany – SUNY, USA

- o **Digital Twins-based Application Development for Digital Manufacturing**
  Dimitrios Georgakopoulos (Swinburne University of Technology), Dinithi Bamunuarachchi
  (Swinburne University of Technology)

- o **When Trust Meets the Internet of Vehicles: Opportunities, Challenges, and Future Prospects**
  Adnan Mahmood (Macquarie University), Michael Sheng (Macquarie University), Sarah Ali Siddiqui
  (Macquarie University), Subhash Sagar (Macquarie University), Wei Emma Zhang (The University of
  Adelaide), Hajime Suzuki (CSIRO Data61) and Wei Ni (CSIRO Data61)

- o **Service-based Drone Delivery**
  Balsam Alkouz (The University of Sydney), Babar Shahzaad (The University Of Sydney) and Athman
  Bouguettaya (The University of Sydney)

- o **Collaborative analysis of genomic data: vision and challenges**
  Sara Jafarbeiki (Monash University), Raj Gaire (CSIRO Data61), Amin Sakzad (Monash University),
  Shabnam Kasra Kermanshahi (RMIT University) and Ron Steinfeld (Monash University)

CogMI Vision Session 1:

8:30 am – 10:30 am
Zoom Link: https://zoom.us/j/92527137644?pwd=N3U3aUNHNTlYeFpDSE4xNzlSYWxXQT09
Session Chair: **Latifur Khan**, University of Texas at Dallas, USA

- o **Towards a trustworthy, secure and reliable enclave for machine learning in a hospital setting:
  the Essen Medical Computing Platform (EMCP)**
  Hendrik F.R. Schmidt (University Hospital Essen), Jörg Schlötterer (University of Duisburg-Essen),
  Marcel Bargull (University Hospital Essen), Enrico Nasca (University Hospital Essen), Ryan Aydelott
  (University Hospital Essen), Christin Seifert (University of Duisburg-Essen) and Folker Meyer
  (University of Duisburg-Essen)

- o **On the Design of Medical Data Ecosystem for Improving Healthcare Research and Commercial
  Incentive**
  Zon-Yin Shae (ASIA University, Taiwan) and Jeffrey Tsai (Asia University, Taiwan)

- A Novel Application of a Semi-Supervised Learning Approach to Identify Choroidal Tumors in Fundus Photographs
  Luay Abdeljaber (University of Texas at Dallas), Latifur Khan (University of Texas at Dallas) and Armin Afshar (University of California San Francisco)

- **Pre-training Graph Neural Network for Cross Domain Recommendation**
  Chen Wang (University of Illinois at Chicago), Yueqing Liang (University of Sydney), Zhiwei Liu (University of Illinois at Chicago), Tao Zhang (University of Illinois at Chicago) and Philip Yu (University of Illinois at Chicago)

TPS Vision Session 1:

8:30 am – 10:30 am
Zoom Link: https://zoom.us/j/96446711740?pwd=Tm9mWjY0anFSdHY3RThJekdVY0lIdz09
Session Chair: **Suryadipta Majumdar**, Concordia University, Canada

- **Security Challenges in the Container Cloud**
  Yutian Yang (Zhejiang University), Wenbo Shen (Zhejiang University), Bonan Ruan (NSFOCUS Inc.), Wenmao Liu (NSFOCUS Inc.) and Kui Ren (Zhejiang University)

- **Perception Poisoning Attacks in Federated Learning**
  Ka Ho Chow (Georgia Institute of Technology) and Ling Liu (Georgia Institute of Technology)

- **Access Control Enforcement in IoT: State of the Art and Open Challenges in the Zero Trust Era**
  Pietro Colombo (Università dell'Insubria), Elena Ferrari (University of Insubria) and Engin Deniz Tumer (University of Insubria)

- **Trustworthy and Sustainable Edge AI: A Research Agenda**
  Aaron Yi Ding (Delft University of Technology), Marijn Janssen (Delft University of Technology) and Jon Crowcroft (University of Cambridge)

Coffee Break (10 min)

Keynote 1

10:40am-11:40am
Zoom Link: https://zoom.us/j/99734470019?pwd=Qm5rV291OGxySjV0WjhLaUFTM3J5UT09
Session Chair: **Ling Liu, Georgia Tech, USA**

Real-Time Edge AI

Tarek Abdezaher,
Professor, University of Illinois Urbana-Champaign, USA

Lunch Break (30 min)

Panel 1

12:10pm–1:40pm
Zoom Link: https://zoom.us/j/95119340756?pwd=OU13VnlvM3ZsZXMzTUhqWE1yd2tqUT09

Post-Quantum Security
Moderator: **Ashish Kundu, Cisco, USA**
Panelists (Last Name Alphabetical)
- o **Craig Costello**, Microsoft Research in Redmond, USA
- o **Vadim Lyubashevsky**, IBM Research Europe – Zurich, Switzerland
- o **Bing Qi**, Cisco, USA
- o **Michele Mosca**, University of Waterloo, Canada

Coffee Break (10 min)

Keynote 2

1:50pm–2:50pm
Zoom Link: https://zoom.us/j/95037304369?pwd=YVRZRU5TY3FjRUlNRHVMSVJCeEI1QT09
Session Chair: **Tarek Abdezaher, University of Illinois Urbana-Champaign, USA**

Enabling a rich and trustworthy nexus of AI and IoT

Mani Srivastava,
Professor, University of California, Los Angeles, USA

Coffee Break (10 min)

Keynote 3

3:00pm-4:00pm
Zoom Link: https://zoom.us/j/99900418344?pwd=Zlh5WU1BM0ZSRDlXbmk0aWF4SFE4Zz09
Session Chair: **Ashish Kundu, Cisco, USA**

Powering a quantum future through quantum circuits

Jerry M. Chow
Director, IBM Quantum, T. J. Watson Research Center, USA

Coffee Break (10 min)

TPS Vision Session 2:

4:10pm-6:10pm
Zoom Link: https://zoom.us/j/91460183056?pwd=NGpKQW9QNkUvZWQweDA5ckRLUXUvQT09
Session Chair: **Lorenzo De Carli**, Worcester Polytechnic Institute, USA

o **DDoS Detection Systems for Cloud Data Storage**
Ting Cao (Auburn University), Jianzhou Mao (Auburn University), Tathagata Bhattacharya (Auburn University), Xiaopu Peng (Auburn University), Wei-Shinn Ku (Auburn University) and Xiao Qin (Auburn University)

o **A Functional Model and Analysis of Next Generation Malware Attacks and Defenses**
Calton Pu (Georgia Institute of Technology), Qingyang Wang (Louisiana State University), Yasuhiko Kanemasa (Fujitsu Limited), Rodrigo Alves Lima (Georgia Institute of Technology), Joshua Kimball (Georgia Institute of Technology), Shungeng Zhang (Augusta University), Jianshu Liu (Louisiana State University) and Xuhang Gu (Louisiana State University)

o **The TSC-PFed Architecture for Privacy-Preserving FL**
Stacey Truex (Denison University), Ling Liu (Georgia Institute of Technology), M. Emre Gursoy (Koc University), Wenqi Wei (Georgia Institute of Technology) and Ka-Ho Chow (Georgia Institute of Technology)

o **DDoS-as-a-Smokescreen: Leveraging Netflow Concurrency and Segmentation for Faster Detection**
Brian Ricks (The University of Texas at Dallas), Patrick Tague (Carnegie Mellon University) and Bhavani Thuraisingham (University of Texas at Dallas)

o **Deep Transfer Learning for Physical Layer Security in Wireless Communication Systems**
Danda B. Rawat (Howard University)

TPS Vision Session 3:

4:10pm-6:10pm
Zoom Link: https://meet.google.com/voa-pxsk-chd
Session Chair: **Surya Nepal**, Data61/CSIRO, Australia

o **Foundations for robust data protection: co-designing law and computer science**
Kobbi Nissim (Georgetown University) and Alexandra Wood (Harvard University)

o **Towards Privacy in Deep Learning**
Florian Kerschbaum (University of Waterloo)

o **Similarities and Learnings from Ancient Literature on Blockchain Consensus and Integrity**
Ashish Kundu (Cisco), Arun Ayachitula (IBM Research) and Nagamani Sistla

o **Video data protection**
Ashish Kundu (Cisco), Abhishek Reddypalle, and Chinmay Kundu (KIIT University)

CogMI Research Session 1:

4:10pm-6:10pm
Zoom Link: https://zoom.us/j/97810275265?pwd=NjZZcy9qT004UkVjaFJBN0lHV2pMQT09
Session Chair: **Haiying Shen**, University of Virginia, USA

o **FireWarn: Fire Hazards Detection Using Deep Learning Models**
Isaac Hogan (Queen's University), Donghao Qiao (Queen's University), Ruikang Luo (Queen's University), Mojtaba Moattari (Queen's University), Austin Carthy (Queen's University), Farhana Zulkernine (Queen's University), François Rivest (Royal Military College of Canada & Queen's University) and Mélanie Breton (Defence Research and Development Canada)

o **Classification and Authentication of Mineral Water Samples using Electronic Tongue and Deep Neural Networks**
Seshu Damarla (University of Alberta), Xiuli Zhu (Donghua University) and Madhusree Kundu (National Institute of Technology Rourkela)

o **ATARAXIS: A Deep Learning Approach for Hardwareless In-Vehicle Presence Detection**
Magnus Oplenskedal (Norwegian University of Science and Technology), Amir Taherkordi (University of Oslo) and Peter Herrmann (Norwegian University of Science and Technology)

o **Impact Patterns of Combining Model Pruning and Continual Learning on Model Performance**
Xueyang Zhang (McGill University), Hang Li (McGill University), Xi Chen (McGill University) and Xue Liu (McGill University)

o **Using Dynamic Bayesian Networks to infer behavioral intentions of social-network users**
Lihi Idan (Yale university)

Special Session on Intelligent Cyber-physical Systems 1

4:10pm-6:10pm
Zoom Link: https://zoom.us/j/96996558954?pwd=UE1JZWlqSkRETVZaSXVUTEsxYWZ0Zz09
Session Chair: **Ting He**, Pennsylvania State University, USA

o **Boosting Sparse Point Cloud Object Detection via Image Fusion**
Weijing Shi (ECE Department, Carnegie Mellon University, Pittsburgh, PA, USA) and Ragunathan Rajkumar (ECE Department, Carnegie Mellon University, Pittsburgh, PA, USA)

o **A Hybrid Deep Learning Model for UAVs Detection in Day and Night Dual Visions**
Alam Noor (CISTER Research Centre, Porto), Kai Li (CISTER Research Centre, Porto), Adel Ammar (Prince Sultan University), Anis Koubâa (Prince Sultan University, Saudi Arabia / CISTER Research Center, Portugal), Bilel Benjdira (Prince Sultan University) and Eduardo Tovar (CISTER Research Centre, Porto)

o **Challenges and Directions for Ambient Intelligence: A Cyber Physical Systems Perspective**
John Stankovic (University of Virginia), Meiyi Ma (Vanderbilt University), Sarah Masud Preum (Dartmouth College) and Homa Alemzadeh (University of Virginia)

o **AI-Powered IoT System at the Edge**
Yiran Chen (Duke University), Ang Li (Duke University), Huanrui Yang (Duke University), Tunhou Zhang (Duke University), Yuewei Yang (Duke University), Hai Li (Duke University), Suman Banerjee (University of Wisconsin-Madison) and Miroslav Pajic (Duke University)

TPS Research Session 1:

4:10pm-6:10pm
Zoom Link: https://zoom.us/j/98318293390?pwd=ZnRDMERvSFd0Y0k2TkREakNvSHhQQT09
Session Chair: **Indrakshi Ray**, Colorado State University, USA

- **HYDRA: Pipelineable Interactive Arguments of Knowledge for Verifiable Neural Networks**
  William Zhang (Ward Melville High School) and Yu Xia (MIT CSAIL)

- **Membership Inference Attack on Graph Neural Networks**
  Iyiola E. Olatunji (L3S Research Center, Hannover, Germany), Wolfgang Nejdl (L3S and University of Hannover) and Megha Khosla (L3S Research Center, Leibniz University)

- **Towards Faster Functional Encryption for Privacy-preserving Machine Learning**
  Prajwal Panzade (Georgia State University) and Daniel Takabi (Georgia State University)

- **Resilient and Verifiable Federated Learning against Byzantine Colluding Attacks**
  Georges Kamhoua (Old Dominion University), Eranga Herath (Old Dominion University), Peter Foytik (Old Dominion University), Priyanka Aggarwal (Old Dominion University) and Sachin Shetty (Old Dominion University)

- **Make Consumers Happy by Defuzzifying the Service Level Agreements**
  Kritagya Upadhyay (University of North Texas), Ram Dantu (University of North Texas), Yanyan He (University of North Texas), Abiola Salau (University of North Texas) and Syed Badruddoja (University of North Texas)

TPS Vision Session 4:

8:30 am – 10:30 am
Zoom Link: https://zoom.us/j/91688097236?pwd=TFpVUkd6U1ZrelE3WXoyaGxuancwQT09
Session Chair: **Wei-Shinn Ku**, NSF And Auburn University, USA

- **The Evolving Path of "the Right to Be Left Alone" - When Privacy Meets Technology**
  Michela Iezzi (Banca d'Italia)

- **Towards Efficient Evaluation of ABAC Policies using High-Dimensional Indexing Techniques**
  Proteet Paul (IIT Kharagpur) and Shamik Sural (IIT, Kharagpur)

- **Energy-Aware Privacy Preserving Approaches**
  Jianzhou Mao (Auburn University), Ting Cao (Auburn University), Xiaopu Peng (Auburn University), Tathagata Bhattacharya (Auburn University), Wei-Shinn Ku (Auburn University) and Xiao Qin (Auburn University)

- **Paradigm Shift from Paper Contracts to Smart Contracts**
  Kritagya Upadhyay (University of North Texas), Ram Dantu (University of North Texas), Yanyan He (University of North Texas), Syed Badruddoja (University of North Texas) and Abiola Salau (University of North Texas)

CogMI Research Session 2:

8:30 am – 10:30 am
Zoom Link: https://zoom.us/j/93376984813?pwd=UFVUK2lpSlplblE2T21iS3A3QWswdz09
Session Chair: **Yanbing Mao**, University of Illinois, USA

- **FairShades: Fairness Auditing via Explainability in Abusive Language Detection Systems**
  Marta Marchiori Manerba (Università di Pisa) and Riccardo Guidotti (Università di Pisa)

- **TRIPLEX: Triple Extraction for Explanation**
  Mattia Setzu (University of Pisa), Anna Monreale (Computer Science Dep., University of Pisa) and Pasquale Minervini (University College London)

- **Boosting Synthetic Data Generation with Effective Nonlinear Causal Discovery**
  Martina Cinquini (University of Pisa), Fosca Giannotti (ISTI-CNR Pisa) and Riccardo Guidotti (University of Pisa)

- **Artificial Intelligence Trends and Future Scenarios: Relations Between Statistics and Opinions**
  Gissel Velarde (Gissel Velarde)

- **Classification of Human Emotions using Ensemble Classifier by Analysing EEG Signals.**
  Lakindu Induwara Mampitiya (Sri Lanka Institute of Information Technology), Rizma Nalmi (Sri Lanka Institute of Information Technology) and Namal Rathnayake (Kochi University of Technology)

CIC Vision Session 2:

8:30 am – 10:30 am
Zoom Link: https://zoom.us/j/94669522412?pwd=eTNjWStldkxJS0FBaG1zbDlTRHo3QT09
Session Chair: **Panos Chrysanthis**, University of Pittsburgh, USA

- **Data-Driven In-Crisis Community Identification for Disaster Response and Management**
  Yudong Tao (University of Miami), Renhe Jiang (The University of Tokyo), Erik Coltey (Florida International University), Chuang Yang (The University of Tokyo), Xuan Song (The University of Tokyo), Ryosuke Shibasaki (The University of Tokyo), Mei-Ling Shyu (University of Miami) and Shu-Ching Chen (Florida International University)

- **Privacy Vulnerabilities of Wearable Activity Monitors: Threat and Potential Defense**
  Moha Mohammad Al-Saad (University of Georgia), Madeleine Lucas (University of Georgia) and Lakshmish Ramaswamy (University of Georgia)

- **Cost-aware & Fault-tolerant Geo-distributed Edge Computing for Low-latency Stream Processing**
  Jinlai Xu (University of Pittsburgh) and Balaji Palanisamy (University of Pittsburgh)

TPS Research Session 2:

8:30 am – 10:30 am
Zoom Link: https://zoom.us/j/93810991661?pwd=VEhFcytDRjFhb1g0TDFUZjEvb1doZz09
Session Chair: **Murat Kantarcioglu**, University of Texas at Dallas, USA

- **Fides: Distributed Cyber-Physical Contracts**
  Lars Creutz (Institute for Software Systems (ISS), Trier University of Applied Sciences), Jens Schneider (Institute for Software Systems (ISS), Trier University of Applied Sciences) and Guido Dartmann (Institute for Software Systems (ISS), Trier University of Applied Sciences)

- **Situational Awareness for Smart Home IoT Security via Finite State Automata Based Attack Modeling**
  Fathima James (Benjamin Franklin Institute of Technology), Indrajit Ray (Colorado State University) and Deepankar Medhi (University of Missouri-Kansas City and National Science Foundation)

- **Edge Centric Secure Data Sharing with Digital Twins in Smart Ecosystems**
  Glen Cathey (Tennessee Technological University), James Benson (The University of Texas at San Antonio), Maanak Gupta (Tennessee Technological University) and Ravi Sandhu (University of Texas at San Antonio)

Coffee Break (10 min)

Keynote 4

10:40am-11:40am
Zoom Link: https://zoom.us/j/92396466116?pwd=bzB4V1N6MWpqcTBiN1ZMMU9wb3JzUT09
Session Chair: **Barbara Carminati, University of Insubria, Italy**

Network Analysis and Mining: Yesterday, today, tomorrow & beyond

Paolo Boldi
Professor, University of Illinois Urbana-Champaign, USA

Coffee Break (5 min)

Keynote 5

11:45 am-12:45 pm
Zoom Link: https://zoom.us/j/97430160494?pwd=NHhjbEpJYVRkbzFjUHIrMG03MDhGdz09
Session Chair: **Huan Liu,** Arizona State University, USA

Towards Safety and Security in Socio-Cyber-Physical Systems

Naira Hovakimyan
Professor, University of Illinois Urbana-Champaign, USA

Coffee Break (5 min)

Keynote 6

12:50 pm-1:50 pm
Zoom Link: https://zoom.us/j/94052045304?pwd=czZ0L2NoUmlWTThlaXZOUE82eVQwdz09
Session Chair: **Surya Nepal,** Data61/CSIRO, Australia

On Deploying Secure Computation Protocols in Daily Business Applications

Moti Yung,
Research Scientist, Google, USA

Special Session on Agriculture Cybersecurity 1

1:50pm-3:50pm
Zoom Link: https://zoom.us/j/97825851019?pwd=b21YTTRCVUtvL1VKUENSWGhXd1dIdz09
Session Chair: **Surya Nepal**, CSIRO's Data61/Cyber Security CRC, Australia
                Helge Janicke, Cyber Security CRC/ECU, Australia

o   **Traceable, trustworthy and privacy preserving agri-food supply chains**
    Sidra Malik (UNSW Sydney), Volkan Dedeoglu (CSIRO), Salil Kanehre (UNSW Sydney), Raja Jurdak (QUT, Brisbane) and Helen Paik (UNSW Sydney)

o   **Towards Assisted Autonomy for Supply Chain Compliance Management**
    Gowri Sankar Ramachandran (Queensland University of Technology), Felicity Deane (Queensland University of Technology), Sidra Malik (Queensland University of Technology), Ali Dorri (Queensland University of Technology) and Raja Jurdak (Queensland University of Technology)

o   **Blockchain Technology: A case study in supply chain management**
    Taha Abdelgalil (University of West Attica), Vasileios Manolas (University of West Attica), Leandros Maglaras (De Montfort University), Ioanna Kantzavelou (University of West Attica) and Mohamed Amine Ferrag (Guelma University, Algeria)

CIC Research Session 1:

1:50pm-3:50pm
Zoom Link: https://zoom.us/j/91583468121?pwd=dDJIek4xWVNVNy8rcjgvUEc5QytEUT09
Session Chair: **Maanak Gupta**, Tennessee Tech University, USA

- **RDMAbox : Optimizing RDMA for Memory Intensive Workload**
  Juhyun Bae (Georgia Institute of Technology), Ling Liu (Georgia Institute of Technology), Yanzhao Wu (Georgia Institute of Technology), Gong Su (IBM T.J. Watson Research) and Arun Iyengar (Intelligent Data Management and Analytics)

- **A Collaborative and Adaptive Feedback System for Physical Exercises**
  Ishan Ranasinghe (University of North Texas), Chengping Yuan (University of North Texas), Ram Dantu (University of North Texas) and Mark Albert (University of North Texas)

- **Hierarchical Federated Learning based Anomaly Detection using Digital Twins for Smart Healthcare**
  Deepti Gupta (University of Texas at San Antonio), Olumide Kayode (Frostburg State University), Smriti Bhatt (Purdue University), Maanak Gupta (Tennessee Technological University) and Ali Saman Tosun (University of North Carolina at Pembroke)

- **Securing Collaborative Work in Wide-band Display Environments**
  Krishna Bharadwaj (University of Illinois at Chicago), Andrew Burks (University of Illinois at Chicago), Andrew Johnson (University of Illinois at Chicago), Lance Long (University of Illinois at Chicago), Luc Renambot (University of Illinois at Chicago), Maxine Brown (University of Illinois at Chicago), Dylan Kobayashi (University of Hawaii at Manoa), Mahdi Belcaid (University of Hawaii at Manoa), Nurit Kirshenbaum (University of Hawaii at Manoa), Roderick Tabalba (University of Hawaii at Manoa), Ryan Theriot (University of Hawaii at Manoa) and Jason Leigh (University of Hawaii at Manoa)

CogMI Vision Session 2:

1:50pm-3:50pm
Zoom Link: https://zoom.us/j/95547007090?pwd=VkxrbjlFcXZQa2huR0JGdzhOc0hpQT09
Session Chair: **Huajie Shao**, William and Mary, USA

- **PerfML: Smart Management of Complex Performance Data and Analytics**
  Joshua Kimball (Georgia Institute of Technology), Rodrigo Alves Lima (Georgia Institute of Technology), Abhijit Suprem (Georgia Institute of Technology), Qingyang Wang (Louisiana State University), Yasuhiko Kanemasa (Fujitsu Limited) and Calton Pu (Georgia Institute of Technology)

- **Prevention, Detection, and Cure for Misinformation**
  Ritwik Banerjee (Stony Brook University) and Indrakshi Ray (Colorado State University)

- **Research Challenges for Combined Autonomy, AI, and Real-Time Assurance**
  Tarek Abdelzaher (UIUC), Sanjoy Baruah (Washington University, St. Louis), Chris Gill (Washington University, St. Louis), Eugene Vorobeychik (Washington University, St. Louis), Ning Zhang (Washington University, St. Louis) and Xuan Zhang (Washington University, St. Louis)

- **Modeling Misinformation Diffusion in Social Media: Beyond Network Properties**
  Francesca Spezzano (Boise State University)

- **An Easy-to-Classify Approach for the Bot-IoT Dataset**
  Joffrey Leevy (LACCEI/FAU), John Hancock (Florida Atlantic University), Taghi Khoshgoftaar (Florida Atlantic University) and Jared Peterson (Florida Atlantic University)

TPS Application Session 1:

Coffee Break (10 min)

TPS Special Session Keynote – Agriculture Cybersecurity

4:00 pm-5:00 pm
Zoom Link: https://zoom.us/j/98990147362?pwd=NXMxL3ZNdXRkNGgxWUdsMHYxZ0VhQT09
Session Chair: **Helge Janicke**, Cyber Security CRC/ECU, Australia

Cybersecurity in agriculture and food systems

Molly Jahn
Program Manager, Defense Advanced Research Projects Agency, USA

Special Session on Agriculture Cybersecurity 2

5:00 pm – 7:00 pm
Zoom Link: https://zoom.us/j/93216945192?pwd=M3pPUlNwQUYzb0QvVU1odUcvYm94dz09
Session Chair: **Surya Nepal**, CSIRO's Data61/Cyber Security CRC, Australia
               Helge Janicke, Cyber Security CRC/ECU, Australia

- **A Privacy Preserving Anomaly Detection Framework for Cooperative Smart Farming Ecosystem**
  Sai Sree Laya Chukkapalli (University of Maryland Baltimore County), Priyanka Ranade (University of Maryland Baltimore County), Sudip Mittal (Mississippi State University) and Anupam Joshi (University of Maryland Baltimore County)

- **A Laboratory-Scale Canal SCADA System Testbed for Cybersecurity Research**
  Mohammad Alim (University of Alabama in Huntsville), Shelton Wright (University of Alabama in Huntsville) and Tommy Morris (University of Alabama in Huntsville)

- **Modeling Multi-Layer Access Control Policies of a Hyperledger-Fabric-Based Agriculture Supply Chain**
  Herath M N Dilum Bandara (Data61, Commonwealth Scientific and Industrial Research Organisation (CSIRO)), Shiping Chen (Data61, Commonwealth Scientific and Industrial Research Organisation (CSIRO)), Mark Staples (Data61, CSIRO) and Yilin Sai (Data61, CSIRO)

Special Session on Intelligent Cyber-physical Systems 2

4:00pm-6:00pm
Zoom Link: https://zoom.us/j/98959131433?pwd=OGwyWU1DUm5pdDVzd2l5MHZCZTlkUT09
Session Chair: **Raghu Ganti**, IBM Research, USA

- **Challenges and Opportunities in Approximate Bayesian Deep Learning for Intelligent IoT Systems**
  Me Meet Vadera (University of Massachusetts Amherst) and Benjamin Marlin (University of Massachusetts Amherst)

- **Enabling Hyperparameter Tuning of Machine Learning Classifiers in Production**
  Sandeep Singh Sandha (UCLA), Mohit Aggarwal (Arm Research), Swapnil Sayan Saha (UCLA) and Mani Srivastava (UCLA)

- **Hierarchical Deep Reinforcement Learning for Multi-robot Cooperation in Partially Observable Environment**
  Zhixuan Liang (Department of Computing, The Hong Kong Polytechnic University), Jiannong Cao (Department of Computing, The Hong Kong Polytechnic University), Wanyu Lin (Department of Computing, The Hong Kong Polytechnic University), Jinlin Chen (Department of Computing, The Hong Kong Polytechnic University) and Huafeng Xu (Department of Computing, The Hong Kong Polytechnic University)

- **On Detection of Out of Distribution Inputs in Deep Neural Networks**
  Susmit Jha (SRI International) and Anirban Roy (SRI International)

CogMI Research Session 3:

4:00pm-6:00pm
Zoom Link: https://zoom.us/j/97611266490?pwd=SVE1SUFqbnhmaE13U2xjYWNYYVJsQT09
Session Chair: **Kasthuri Jayarajah**, University of Maryland Baltimore County, USA

- **An Empathetic AI Coach for Self-Attachment Therapy**
  Lisa Alazraki (Imperial College London, Department of Computing), Ali Ghachem (Imperial College London, Department of Computing), Neophytos Polydorou (Imperial College London, Department of Computing), Foaad Khosmood (California Polytechnic State University) and Abbas Edalat (Imperial College London, Department of Computing)

- **Cross-Domain Sentiment Classification with Attention-Assisted GAN**
  Yifan Li (The University of Texas at Dallas), Yu Lin (The University of Texas at Dallas), Yang Gao (The University of Texas at Dallas), Zhuoyi Wang (The University of Texas at Dallas) and Latifur Khan (UTD)

- **Valence/Arousal Estimation of Occluded Faces from VR Headsets**
  Tom Gotsman (Imperial College London), Neophytos Polydorou (Imperial College London) and Abbas Edalat (Imperial College London)

- **All-Clear Solar Energetic Particle Event Prediction: Methods and Implementation**
  Anli Ji (Georgia State University), Akhil Arya (Georgia State University), Dustin Kempton (Georgia State University), Rafal Angryk (Georgia State University), Manolis Georgoulis (Georgia State University) and Berkay Aydin (Georgia State University)

Tutorial 1

6:00pm-7:00pm
Zoom Link: https://zoom.us/j/97184086229?pwd=RTMvY2t0MzkxOGZHV0tISEJaT2pPZz09
Session Chair: **Indrakshi Ray**, Colorado State University, USA

Can federated learning solve our data privacy problems? State of the art and open challenges

Nathalie Baracaldo
Manager AI Security and Privacy Solutions and Research Staff Member, IBM Almaden Research Center, USA

IEEE 2021 CIC/CogMI/TPS Joint Conferences
Day 3: Wednesday, Dec. 15, 2021

TPS Research Session 3:

8:30am-10:30am
Zoom Link: https://zoom.us/j/92341987367?pwd=b1g5YVNXcXljdDI5ODJyQjdaUWRMQT09
Session Chair: **Hossein Shirazi**, Colorado State University, USA

o   **Feature Reduction through Data Pre-Processing for Intrusion Detection in IoT Networks**
    Tania Tahmina Jui (Bangladesh University of Engineering and Technology), Md. Nazmul Hoq
    (Concordia University), Suryadipta Majumdar (Concordia University) and Md. Shohrab Hossain
    (Bangladesh University of Engineering and Technology)

o   **A Comparative Evaluation of Differentially Private Image Obfuscation**
    Dominick Reilly (UNC Charlotte) and Liyue Fan (UNC Charlotte)

o   **Can pre-trained transformers be used in detecting complex sensitive sentences? - A
    Monsanto case study**
    Roelien Timmer (The University of New South Wales), David Liebowitz (The University of New South
    Wales, Sydney), Surya Nepal (Data61, Cyber Security CRC) and Salil Kanhere (The University of
    New South Wales, Sydney)

CogMI Vision Session 3:

8:30 am – 10:30 am
Zoom Link: https://zoom.us/j/94869834800?pwd=VytaN1ZVQ01HNWFzaUV1ZnF6TGVVdz09
Session Chair: **Adrienne Raglin**, DEVCOM Army Research Laboratory, USA

o   **Towards a new paradigm for managing computing continuum applications**
    Víctor Casamayor Pujol (DSG - TUW), Philipp Raith (DSG - TUW) and Schahram Dustdar (DSG -
    TUW)

o   **Addressing the Limitations of AI/ML in creating Cognitive Solutions**
    Dinesh Verma (IBM), Archit Verma (IBM) and Utpal Mangla (IBM)

o   **Artificial Reasoning Towards Goal-Oriented Adaptive Array of Sensors**
    Adrienne Raglin (Army Research Laboratory), Hank Hoffman (University of Chicago), Mark Mittrick
    (Army Research Laboratory), Heather Zheng (Army Research Laboratory) and Justine Caylor (Army
    Research Laboratory)

o   **Parallel Detection for Efficient Video Analytics at the Edge**
    Yanzhao Wu (Georgia Tech), Ling Liu (Georgia Tech) and Ramana Kompella (CISCO, USA)

TPS Vision Session 5:

8:30 am – 10:30 am
Zoom Link: https://zoom.us/j/93291126616?pwd=SGN0Wm9nazVkS3p5VXVQcnlHQ1VCQT09
Session Chair: **Murat Kantarcioglu**, University of Texas at Dallas, USA

o **Online Symbolic Learning of Policies for Explainable Security**
Arthur Drozdov (Imperial College London), Mark Law (ILASP Limited), Jorge Lobo (ICREA and Universitat Pompeu Fabra), Alessandra Russo (Imperial College London) and Mercion Wilathgamuwage Don (Cisco)

o **Metaverse: Security and Privacy Issues**
Roberto Di Pietro (HBKU-CSE) and Stefano Cresci (CNR-IIT)

o **Securing social media for seniors from information attacks: Modeling, detecting, intervening, and communicating risks**
Vignesh Narayanan (University of South Carolina), Brett Robertson (University of South Carolina), Andrea Hickerson (University of South Carolina), Biplav Srivastava (University of South Carolina), Bryant Walker Smith (University of South Carolina)

o **The impact of data distribution on fairness and robustness in federated learning**
Mustafa Ozdayi (University of Texas at Dallas) and Murat Kantarcioglu (The University of Texas at Dallas)

o **Deception for Cyber Defence: Challenges and Opportunities**
David Liebowitz (Penten and UNSW), Surya Nepal (CSIRO Data61 and Cybersecurity CRC), Kristen Moore (CSIRO's Data61 and Cybersecurity CRC), Cody James Christopher (CSIRO's Data61 and Cybersecurity CRC), Salil Kanhere (UNSW), David Nguyen (UNSW, CSIRO Data61 and Cybersecurity CRC), Roelien Christien Timmer (UNSW, CSIRO Data61 and Cybersecurity CRC), Michael Longland (UNSW, CSIRO Data61 and Cybersecurity CRC) and Keerth Rathakumar (UNSW, CSIRO Data61 and Cybersecurity CRC)

CIC Research Session 2:

8:30 am – 10:30 am
Zoom Link: https://zoom.us/j/91208442529?pwd=MHFpSXBwTGI2dS9SSURHVlRTN1dWZz09
Session Chair: **Smriti Bhatt**, Purdue University, USA

o **Sound Classification in Phonetic Exams with MFCC and DTW**
Jueting Liu (Auburn University), Marisha Speights (Auburn University), Dallin Bailey (Auburn University), Sicheng Li (Auburn University), Huanyi Zhou (Auburn University), Yaoxuan Luan (Auburn University), Tianshi Xie (Auburn University) and Cheryl Seals (Auburn University)

o **IoT Reconnaissance Attack Classification with Random Undersampling and Ensemble Feature Selection**
Joffrey Leevy (LACCEI/FAU), John Hancock (Florida Atlantic University), Taghi Khoshgoftaar (Florida Atlantic University) and Naeem Seliya (University of Wisconsin - Eau Claire)

o **Co-Creational Framework in a Game based Learning Flipped Classroom Environment Focusing on the Combination of Coding, Gamification and Drone-Building in STEM Education**
Arthur Schuchter (University of Tromsø)

Lunch Break (30 min)

Keynote 7

11:00 am-12:00 pm
Zoom Link: https://zoom.us/j/94669374951?pwd=TDN6cUg3bGxQK1dtUks0WnB0czl3dz09
Session Chair: **Murat Kantarcioglu**, University of Texas at Dallas

How Technology Will Dictate Our Civic Future

Latanya Sweeney
Professor, Harvard University, USA

Coffee Break (10 min)

Keynote 8

12:10 pm – 1:10 pm
Zoom Link: https://zoom.us/j/98734767771?pwd=dEZPMG9zd2ZIQTFZaGoyTWVEVTdaQT09
Session Chair: **Huan Liu**, Arizona State University

Orchestrating Change with Disinformation and Influence

Kathleen Carley
Professor, Carnegie Mellon University, USA

Coffee Break (10 min)

Panel 2

1:30pm-3:00pm
Zoom Link: https://zoom.us/j/95472433719?pwd=WVNVQ25PUXJWYjFMNldQenIyam45dz09

Privacy and Fairness

Moderator: **Jaideep Vaidya**, Rutgers University, USA
Panelists (Last Name Alphabetical)
- **Rachel Cummings**, Columbia University, USA
- **Murat Kantarcioglu**, University of Texas at Dallas, USA
- **Ling Liu**, Georgia Institute of Technology, USA
- **Gerome Miklau**, University of Massachusetts, Amherst, and Tumult Labs, USA
- **Vivek Singh**, Rutgers University, USA

Coffee Break (10 min)

Panel 3

3:10pm-4:40pm
Zoom Link: https://zoom.us/j/95644359012?pwd=R2NubGlURzVsZXFpS1dmazJ4TVRaUT09

Pandemic 2023 – An Information Technology Retrospective

Moderator: **Indrajit Ray**, Colorado State University, USA
Panelists (Last Name Alphabetical)
- o **Ritwik Banerjee**, Stony Brook University, USA
- o **Nalini Venkatasubramanian**, University of California, Irvine, USA
- o **Ramesh Raskar**, MIT Media Lab, USA
- o **Calton Pu**, Georgia Institute of Technology, USA

Coffee Break (10 min)

Best Paper Awards and Closing Remarks

4:50 pm – 5:20 pm
Zoom Link: https://zoom.us/j/97025241911?pwd=YWhaUWRkTWxDOXNqMFFRTHpEdnhDZz09
Session Chairs: **TBD**

Best Paper Awards

TPS - General Co-Chairs
      Ravi Sandhu, *University of Texas, San Antonio, USA*
      Karl Aberer, *EPFL-IC-IIF-LSIR, Switzerland*
TPS - Program Co-Chairs
      Elena Ferrari, *University of Insubria, Italy*
      Murat Kontarcioglu, *University of Texas, USA*
      Indrakshi Ray, *Colorado State University, USA*
CogMI - General Co-Chairs
      Paolo Boldi, *University of Milan, Italy*
      Calton Pu, *Georgia Tech, USA*
CogMI - Program Co-Chairs
      Tarek Abdelzher, *University of Illinois Urbana Champaign, USA*
      Huan Liu, *Arizona State University, USA*
      Christin Seifert, *University of Duisburg-Essen, Germany*
CIC - General Co-Chairs
      Panos Chrysanthis, *University of Pittsburgh, USA*
      Dimitrios Georgakopolous, *Swinburne University of Technology, USA*
CIC - Co-Chairs
      Surya Nepal, *Data61/CSIRO, Australia*
      Barbara Carminati, *University of Insubria, Italy*

Amir Masoumzadeh, *SUNY Albany, USA*