

DEEPAK GANGADHARAN
ASSISTANT PROFESSOR, IIIT HYDERABAD
Email: gdeepak11@gmail.com
<https://gdeepak11.github.io/>

Research Interests

Scalable Design and Performance Analysis of Edge-based IoT systems, Analysis and Scheduling of Real-Time Distributed Systems/Cyber-Physical Systems, Intelligent Transportation Systems, Hardware/Software Co-Design, Fault tolerant System Design, IoT Middleware

Education

- **PhD, Computer Science, National University of Singapore**
Aug 2007 - Dec 2012
 - Topic: Quality-aware performance analysis for multimedia MPSoC platforms
- **BTech, Electrical and Communication Engineering, University of Kerala (India)**
Oct 1998 - May 2002
 - Final Year Thesis: GTK-based implementation of remote command execution

Teaching Experience

- **Instructor, IIIT Hyderabad (Spring 2020, Fall 2021, Spring 2022, Spring 2023)**
 - Introduction to IoT
- **Instructor, IIIT Hyderabad (Fall 2020, Fall 2021, Fall 2022)**
 - Real-Time Embedded Systems
- **Instructor, IIIT Hyderabad (Spring 2021, Spring 2022, Spring 2023)**
 - Introduction to Processor Architectures
- **Instructor, IIIT Hyderabad (Spring 2021)**
 - Computer Systems Organization
 - Software Programming for Performance
- **Instructor, Online Course**
 - oneM2M - IoT Interoperability Standard -
<https://mooc.indiaeu-ictstandards.in/courses/onem2m/>

Professional Experience

- **Assistant Professor, IIIT Hyderabad, India**
Oct 2019 - Now
 - Computer Systems Group

- **PostDoctoral Researcher, University of Pennsylvania**
May 2015 - Aug 2019
 - Project: Plug and Play of Automotive Features and Connected Vehicles funded by Toyota ITC
- **PostDoctoral Researcher, University of Erlangen, Nuremberg**
Sep 2013 - March 2015
 - Project: Invasive Computing
- **PostDoctoral Researcher, DTU Informatics, Technical University of Denmark**
Jan 2012 - Jul 2013
 - Project: ASAM - Automatic Architecture Synthesis and Application Mapping
- **Research Assistant, School of Computer Engineering, Nanyang Technological University**
Aug 2005 - April 2007
 - Project: Development of Reconfigurable Hardware Architectures for Selected Image/Signal Processing Algorithms
- **Senior Design Engineer, Conexant Systems Inc. (after acquiring Paxonet Communications Pvt. Ltd.)**
Aug 2004 - June 2005
 - Worked on RTL Design and Validation of various physical and data link layer protocols on ASICs and FPGAs
- **Design Engineer, Paxonet Communications Pvt. Ltd.**
Aug 2002 - July 2004
 - Worked on RTL Design and Validation of various physical and data link layer protocols on ASICs and FPGAs

Research Summary

- **Deep learning algorithm design and hardware system implementation for driving event classification/accident detection for two wheelers**
 - Development of a hardware system to collect data of motorcycle driving with gyroscope, accelerometer, GPS sensors
 - Data collection for driving events and accident scenarios
 - LSTM based model development and implementation for real-time driving event classification/accident detection
- **Development of energy-efficient smart edge devices for traffic flow prediction and control**
 - Development of deep learning models for accurate traffic flow prediction for Indian cities
 - Energy-efficient implementation of the developed models using Approximate Computing for resource constrained smart edge devices

- Deployment of the edge device in traffic intersection for real-time traffic flow prediction
- **Embedded system based fault detection and control of autonomous UAV**
 - Development/Implementation of efficient fault detection algorithms on companion computers for autonomous UAVs
 - Development/Implementation of efficient reconfiguration algorithms to tolerate sensor/motor faulty operations
- **Secure Drones: Analyze, Deploy, and Decide Cryptographic Modules in UAVs**
 - Offline performance analysis of the execution complexities of various security algorithms
 - Runtime system development to dynamically schedule the appropriate security algorithm based on the current state of the UAV
- **Design of Infrastructure for Delivery of Update/Services to Connected Vehicles using Edge Devices (Automotive IoT scenario)**
 - Developed an optimization framework to derive optimal delivery of update/services to vehicles in motion via the edge infrastructure while considering objectives like bandwidth utilization, delivery time, etc.
 - Developed a heuristic to address the scalability issue in update/service delivery while considering multiple system objectives.
- **Timing Analysis for Deployment of Safety-Critical Applications on Automotive Platforms**
 - Developed specification framework and feasibility analysis tool for plug and play of automotive safety features
 - Proposed an end-to-end delay analysis technique for mixed critical applications on multiprocessor systems
 - Proposed a technique to schedule periodic tasks in a scheduling agnostic manner under data freshness constraint
- **Performance Analysis for Timing Predictability in Many-Core Systems**
 - Investigated methods to increase system utilization in many-core systems under timing constraints
 - Exploring run-time resource management techniques to achieve non functional properties in many-core systems
- **Automatic System Level Synthesis of Multi-ASIP platforms**
 - Team member of a European project **ASAM** that has the broad goal of developing tools for automatic synthesis of multi-ASIP architectures. Our group at DTU Informatics works on the specific objective of developing novel techniques for System level Platform Synthesis of multi-ASIP architectures.
- **Quality Driven Performance Analysis of Multimedia MPSoC Platforms**

- Developed analytical models to analyze buffer and processing resource requirements in multimedia MPSoC Platforms with data loss using Network-Calculus based framework (**Work done during internship (Feb 2011 - April 2011) at Institute for Real-Time Computer Systems, Technical University of Munich chaired by Dr. Samarjit Chakraborty**)
- Developed efficient prioritized data dropping scheme in multimedia streams to design resource efficient MPSoC platforms
- Developed quality aware techniques for thermal management of video applications on MPSoC platforms
- Investigated the impact of using Stochastic Network-Calculus based analysis framework towards the design of multimedia processing platforms
- **Efficient Test Case Classification Methodologies for Multimedia MPSoC Platforms**
 - Classification methods using novel multimedia workload models and performance model
- **Resource Efficient Mapping of Signal/Image Processing Algorithms to FPGAs/ASIC**
 - Reconfigurable area-efficient architectures for 2D convolvers
 - Study of Performance Characteristics of Parallel and Pipelined Implementations of FIR filters on FPGA

Publications - (<https://scholar.google.com/citations?user=xwiIRvYAAAAJ&hl=en>)

ORCID ID - 0000-0001-6630-0012

- SVSLN Surya Suhas Vaddhiparthi, Joseph John Cherukara, **Deepak Gangadharan** and BaekGyu Kim, “ **Collision-Aware Data Delivery Framework for Connected Vehicles via Edges**,” *Accepted to 98th IEEE Vehicular Technology Conference (VTC-Fall)*, 2023
- Joseph John Cherukara, SVSLN Surya Suhas Vaddhiparthi, **Deepak Gangadharan** and BaekGyu Kim, “ **Dynamic Data Delivery Framework for Connected Vehicles via Edge Nodes with Variable Routes**,” *Accepted to 98th IEEE Vehicular Technology Conference (VTC-Fall)*, 2023
- Sai Usha Goparaju, Keerthi Pothalraju, Shriya Dullur, Arihant Jain and **Deepak Gangadharan**, “ **Time-Series based Fall Detection in Two-Wheelers**,” *Accepted to 98th IEEE Vehicular Technology Conference (VTC-Fall)*, 2023
- VJS Pranavasri, Leo Francis, Ushasri Mogadali, Gaurav Pal, SVSLN Surya Suhas Vaddhiparthi, Anuradha Vatter, Karthik Vaidhyanathan and **Deepak Gangadharan**, “ **Scalable and Interoperable Distributed Architecture for IoT in Smart Cities**,” *Accepted to 9th IEEE World Forum on Internet of Things (WF-IoT)*, 2023
- BaekGyu Kim and **Deepak Gangadharan**, “ **Regular-Empirical Composite Workload Analysis for RSU-Assisted Computation Offloading in Connected Vehicle Services**,” *Accepted to IEEE International Symposium on Workload Characterization (IISWC)*, 2023
- Aditya Mulgundkar, Mayank Singh, Munjaal Bhatt, Prudhvi Raj Turlapati, **Deepak Gangadharan** and Harikumar Kandath, “ **Fault Detection and Isolation on a Hexacopter UAV using a Two-stage classification method**,” *Accepted to 19th IEEE International Conference on Automation Science and Engineering (CASE)*, 2023

- SVSLN Surya Suhas Vaddhiparthy, Sreya Garapati, Prudhvi Raj Turlapati, **Deepak Gangadharan** and Harikumar Kandath, "**A Comprehensive Evaluation on the Impact of Various Spoofing Scenarios on GPS Sensors in a Low-Cost UAV**," *Accepted to 19th IEEE International Conference on Automation Science and Engineering (CASE)*, 2023
- Avijit Ashe, Srikanth Goli, Harikumar Kandath and **Deepak Gangadharan**, "**Multivariate Data Analysis for Motor Failure Detection and Isolation in a Multicopter UAV using Real-Flight Attitude Signals**," *In Proceedings of International Conference on Unmanned Aircraft Systems (ICUAS)*, 2023
DOI – <https://doi.org/10.1109/ICUAS57906.2023.10155856>
- Sai Usha Goparaju, Rahul Biju, Pravalika M, Bhavana MC, **Deepak Gangadharan**, Bappaditya Mandal and Pradeep C, "**Optimization and Performance Evaluation of Hybrid Deep Learning Models for Traffic Flow Prediction**," *In Proceedings of 97th IEEE Vehicular Technology Conference (VTC)*, 2023
DOI – <https://doi.org/10.1109/VTC2023-Spring57618.2023.10200600>
- Sai Usha Goparaju, Lakshmanan L, Abhinav Navnit, Rahul Biju, Lovish Bajaj, **Deepak Gangadharan** and Aftab Hussain, "**Time Series-based Driving Event Recognition for Two Wheelers**," *In Proceedings of Design Automation and Test in Europe (DATE)*, 2023
DOI – <https://doi.org/10.23919/DATE56975.2023.10136944>
- Shubham Mante, SVSLN Surya Suhas Vaddhiparthy, Ruthwik Muppala, Aftab Hussain, **Deepak Gangadharan** and Anuradha Vattam, "**A Multi Layer Data Platform Architecture for Smart Cities using oneM2M and IUDX**," *In Proceedings of 8th IEEE World Forum on Internet of Things (WF-IoT)*, 2022
DOI – <https://doi.org/10.1109/WF-IoT54382.2022.10152258>
- Akshaj Gupta, Joseph John Cherukara, **Deepak Gangadharan**, BaekGyu Kim, Oleg Sokolsky and Insup Lee, "**Global Edge Bandwidth Cost Gradient-based Heuristic for Fast Data Delivery to Connected Vehicles under Vehicle Overlaps**," *In Proceedings of 95th IEEE Vehicular Technology Conference (VTC)*, 2022
DOI – <https://doi.org/10.1109/VTC2022-Spring54318.2022.9860915>
- Shubham Mante, Nathalie Hernandez, Aftab Hussain, Sachin Chaudhari, **Deepak Gangadharan** and Thierry Monteil, "**5D-IoT, a Semantic Web Based Framework for Assessing IoT Data Quality**," *In Proceedings of the 37th ACM/SIGAPP Symposium on Applied Computing (SAC)*, 2022
DOI – <https://dl.acm.org/doi/10.1145/3477314.3507234>
- Sai Usha Nagasri Goparaju, SVSLN Surya Suhas Vaddhiparthy, Pradeep C, Anuradha Vattam and **Deepak Gangadharan**, "**Design of an IoT System for Machine Learning Calibrated TDS Measurement in Smart Campus**," *In Proceedings of 7th IEEE World Forum on Internet of Things (WF-IoT)*, 2021
DOI – <https://doi.org/10.1109/WF-IoT51360.2021.9595057>
- Akshaj Gupta, Joseph John Cherukara, **Deepak Gangadharan**, BaekGyu Kim, Oleg Sokolsky and Insup Lee, "**E-PODS: A Fast Heuristic for Data/Service Delivery in Vehicular Edge Computing**," *In Proceedings of 93rd IEEE Vehicular Technology Conference (VTC)*, 2021
DOI – <https://doi.org/10.1109/VTC2021-Spring51267.2021.9448649>
- JinHyun Kim, **Deepak Gangadharan**, Kyong Hoon Kim, Insik Shin and Insup Lee, "**Hierarchical Scheduling**," *Book Chapter in Handbook of Real-Time Computing*, 2019 (Equal Contribution)

- **Deepak Gangadharan**, Oleg Sokolsky, Insup Lee and BaekGyu Kim, “**Social Welfare-based Optimization for Data/Service Delivery to Connected Vehicles via Edges**,” *1st International Workshop on Trustworthy and Real-time Edge Computing for Cyber-Physical Systems Workshop (TREC4CPS)*, 2018
- Andreas Weichslgartner, Stefan Wildermann, **Deepak Gangadharan**, Michael Glass and Jürgen Teich, “**A Design-Time/Run-Time Application Mapping Methodology for Predictable execution Time in MPSoCs**,” *ACM Transactions on Embedded Computing Systems*, 2018 (**Impact Factor – 1.367, Main Contributor to the Idea**)
DOI – <https://doi.org/10.1145/3274665>
- **Deepak Gangadharan**, Oleg Sokolsky, Insup Lee, BaekGyu Kim, Chung-Wei Lin and Shinichi Shiraishi, “**Bandwidth Optimal Data/Service Delivery for Connected Vehicles via Edges**,” *In Proceedings of 11th IEEE International Conference on Cloud Computing (CLOUD)*, 2018 (**Acceptance rate – 19%**)
DOI – <https://doi.org/10.1109/CLOUD.2018.00021>
- Dagaen Golomb, **Deepak Gangadharan**, Sanjian Chen, Oleg Sokolsky and Insup Lee, “**Data Freshness Over-Engineering: Formulation and Results**,” *In Proceedings of 21st International Symposium on Real-Time Computing (ISORC)*, 2018 (**Best Paper Award [1 out of 51 papers], Mentor and Main Contributor to the Idea**)
DOI – <https://doi.org/10.1109/ISORC.2018.00034>
- JinHyun Kim, **Deepak Gangadharan**, Oleg Sokolsky, Axel Legay and Insup Lee, “**Extensible Energy Planning Framework for Preemptive Task**,” *In Proceedings of 20th International Symposium on Real-Time Computing (ISORC)*, 2017
DOI – <https://doi.org/10.1109/ISORC.2017.14>
- **Deepak Gangadharan**, JinHyun Kim, Oleg Sokolsky, BaekGyu Kim, Chung-Wei Lin, Shinichi Shiraishi and Insup Lee, “**Platform-based Plug and Play of Automotive Safety Features: Challenges and Directions**,” *In Proceedings of 22nd IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA)*, 2016 (**Invited Paper**)
DOI – <https://doi.org/10.1109/RTCSA.2016.18>
- **Deepak Gangadharan**, Oleg Sokolsky, Insup Lee, BaekGyu Kim, Chung-Wei Lin, Shinichi Shiraishi, “**Platform-based Automotive Safety Features**,” *In SAE World Congress*, 2016
Link – <https://www.sae.org/publications/technical-papers/content/2016-01-0136/>
- Andreas Weichslgartner, **Deepak Gangadharan**, Stefan Wildermann, Michael Glass and Jürgen Teich, “**DAARM: Design-Time Application Analysis and Run-Time Mapping for Predictable Execution in Many-Core Systems**,” *In Proceedings of the 9th International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS)*, 2014 (**Acceptance rate – 25%**) (**Mentor and Equal Contribution**)
DOI – <https://doi.org/10.1145/2656075.2656083>
- **Deepak Gangadharan**, Ericles Sousa, Vahid Lari, Frank Hannig and Jürgen Teich, “**Application-driven Reconfiguration of Shared Resources for Timing Predictability of MPSoC Platforms**,” *In Proceedings of 48th Asilomar Conference on Signals, Systems and Computers*, 2014 (**Invited Paper**)
DOI – <https://doi.org/10.1109/ACSSC.2014.7094471>
- Ericles Sousa, **Deepak Gangadharan**, Frank Hannig and Jürgen Teich, “**Runtime Reconfigurable Bus Arbitration for Concurrent Applications on Heterogeneous MPSoC**

Architectures, "In Proceedings of the EUROMICRO Digital System Design Conference (DSD), 2014 (Acceptance rate – 25%) (Mentor and Main Contributor to the Idea)
DOI – <https://doi.org/10.1109/DSD.2014.105>

- **Deepak Gangadharan**, Samarjit Chakraborty and Jürgen Teich, "Quality-aware Video Decoding on Thermally-constrained MPSoC Platforms", "In Proceedings of the 25th IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP), 2014 (Acceptance rate – 25.8%)
DOI – <https://doi.org/10.1109/ASAP.2014.6868670>
- **Deepak Gangadharan**, Alexandru Tanase, Frank Hannig and Jürgen Teich, "Timing Analysis of a Heterogeneous Architecture with Massively Parallel Processor Arrays", "DATE Workshop on Performance, Power and Predictability of Many-Core Embedded Systems (3PMCES), 2014
Link – <http://ecsi.org/resource/workshop/2014/3PMCES/DATE/paper/timing-analysis-heterogeneous-architecture-massively-parallel-processor-arrays>
- Lech Jozwiak, Menno Lindwer, Rosilde Corvino, Paolo Meloni, Laura Micconi, Jan Madsen, Erkan Diken, **Deepak Gangadharan**, Roel Jordans et. al., "ASAM: Automatic Architecture Synthesis and Application Mapping", "Microprocessors and Microsystems - Embedded Hardware Design 37(8-C), 2013 (Impact Factor – 1.049)
DOI – <https://doi.org/10.1016/j.micpro.2013.08.006>
- **Deepak Gangadharan**, Laura Micconi, Paul Pop and Jan Madsen, "Multi-ASIP Platform Synthesis for Event-Triggered Applications with Cost/Performance Trade-offs", "In Proceedings of the 19th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA), 2013 (Acceptance rate – 30%)
DOI – <https://doi.org/10.1109/RTCSA.2013.6732228>
- Laura Micconi, **Deepak Gangadharan**, Paul Pop and Jan Madsen, "Multi-ASIP Platform Synthesis for Real-Time Applications", "In Proceedings of 8th IEEE International Symposium on Industrial Embedded Systems (SIES), 2013 (Mentor and Main Contributor to the Idea)
DOI – <https://doi.org/10.1109/SIES.2013.6601471>
- Balaji Raman, Ayoub Nouri, **Deepak Gangadharan**, Marius Bozga, Ananda Basu et. al., "Stochastic Modeling and Performance Analysis of Multimedia SoCs", "In Proceedings of International Conference on Embedded Computer Systems: Architectures, Modeling and Simulation (SAMOS), 2013 (Equal Contribution)
DOI – <https://doi.org/10.1109/SAMOS.2013.6621117>
- **Deepak Gangadharan**, Samarjit Chakraborty and Roger Zimmermann, "Quality-Aware Media Scheduling on MPSoC Platforms", "In Proceedings of Design Automation and Test in Europe (DATE), 2013 (Acceptance rate – 16.4%)
DOI – <https://doi.org/10.7873/DATE.2013.204>
- Lech Jozwiak, Menno Lindwer, Rosilde Corvino, Paolo Meloni, Laura Micconi, Jan Madsen, Erkan Diken, **Deepak Gangadharan**, Roel Jordans et. al., "ASAM: Automatic Architecture Synthesis and Application Mapping", "In Proceedings of the 15th Euromicro Conference on Digital System Design (DSD), 2012 (Acceptance rate – 22%)
DOI – <https://doi.org/10.1109/DSD.2012.28>
- **Deepak Gangadharan**, Haiyang Ma, Samarjit Chakraborty and Roger Zimmermann, "Video Quality-Driven Buffer Dimensioning in MPSoC Platforms via

Prioritized Frame Drops, "In Proceedings of the 29th IEEE International Conference on Computer Design (ICCD), 2011 (**Acceptance rate – 28%**)
DOI – <https://doi.org/10.1109/ICCD.2011.6081404>

- Balaji Raman, Guillaume Quintin, Wei Tsang Ooi, **Deepak Gangadharan**, Jerome Milan and Samarjit Chakraborty, "**On Buffering with Stochastic Guarantees in Resource-Constrained Media Players**," In Proceedings of the 9th IEEE/ACM International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS), 2011 (**Acceptance rate – 28%**)(**Equal Contribution**)
DOI – <https://doi.org/10.1145/2039370.2039398>
- **Deepak Gangadharan**, Linh T.X. Phan, Samarjit Chakraborty, Roger Zimmermann and Insup Lee, "**Video Quality Driven Buffer Sizing via Frame Drops**," In Proceedings of the 17th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA), 2011 (**Acceptance rate – 31%**)
DOI – <https://doi.org/10.1109/RTCSA.2011.49>
- **Deepak Gangadharan**, Samarjit Chakraborty, Roger Zimmermann, "**Fast Hybrid Simulation for Accurate Decoded Video Quality Assessment on MPSoC Platforms with Resource Constraints**," In Proceedings of the 16th Asia and South Pacific Design Automation Conference (ASP-DAC), 2011 (**Acceptance rate – 31%**)
DOI – <https://doi.org/10.1109/ASPDAC.2011.5722190>
- Haiyang Ma, **Deepak Gangadharan**, Nalini Venkatasubramanian, Roger Zimmermann, "**Energy-aware complexity adaptation for mobile video calls**," In Proceedings of ACM Multimedia (MM), 2011 (**Short Paper, Acceptance rate – 36.3%**)
DOI – <https://doi.org/10.1145/2072298.2072002>
- **Deepak Gangadharan**, Samarjit Chakraborty, Roger Zimmermann, "**Fast model-based test case classification for performance analysis of multimedia MPSoC platforms**," In Proceedings of the 7th IEEE/ACM International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS), 2009 (**Acceptance rate – 32%**)
DOI – <https://doi.org/10.1145/1629435.1629492>
- **G. Deepak**, R. Mahesh and A. Sluzek, "**Adaptable Area-Efficient Parallel Architecture for Grey and Color Image Convolvers**," In 8th International Symposium on Signals, Circuits and Systems (ISSCS), 2007
- **G. Deepak**, P. K. Meher and A. Sluzek, "**Performance Characteristics of Parallel and Pipelined Implementation of FIR Filters in FPGA Platform**," In 8th International Symposium on Signals, Circuits and Systems (ISSCS), 2007
- **G. Deepak**, R. Mahesh and A. Sluzek, "**Design of an Area-Efficient Multiplierless Processing Element For Fast Two Dimensional Image Convolution**," In 13th IEEE International Conference on Electronics, Circuits and Systems (ICECS), 2006
DOI – <https://doi.org/10.1109/ICECS.2006.379826>

Student Mentoring at IIIT Hyderabad

- **MS**
Aug 2021 - Now
 - Sai Usha Nagasri Goparaju - Topic: Time Series-based Event Detection for Two Wheelers

- SVSLN Surya Suhas Vaddhiparthi - Topic: Data and Service Delivery Vehicular Edge Computing Frameworks considering Network Collisions and Security Constraints
- Rahul Biju - Topic: Efficient Implementation of Deep Learning Models on Edge Devices for Accurate Traffic Flow Prediction

- **MS - Dual Degree**

Jan 2020 - Now

- Akshaj Gupta - Topic: Fast Heuristic Algorithms for Data/Service Delivery for Connected Vehicles via Edges (**Finished Thesis**)
- Joseph John Cherukara - Topic: Multiobjective and dynamic data/service delivery for Internet of Vehicles
- Sridhar M - Topic: Determination of Data Freshness in a Checkpointing based Fault-tolerant System

Student Mentoring at University of Pennsylvania

- **Bachelor's Senior Project**

Sep 2018 - April 2019

- Group of 5 - Topic: Algorithm for Fuel Efficient System Level Vehicle Platoon Management

- **Bachelor's**

Feb 2018 - May 2018

- Miku Fujita - Topic: Scalable Data/Service Delivery to Connected Vehicles via Edges
- Stephanie Tang - Topic: Vehicular Edge Computing Simulator

- **PhD**

Jan 2016 - Jan 2017

- Dagaen Golomb - Topic: Data Freshness Formulation for Embedded Systems

Professional Service

- Track Chair - IEEE INDICON 2023
- Student Consortium Chair - IEEE BigMM 2020
- Session Chair - IEEE Cloud 2018 Regular Paper Session
- Program Committee - IEEE ANTS 2022-2023, IEEE INDICON 2023, IEEE HiPC 2022, IEEE MASS 2020, IEEE BigMM 2020, IEEE COINS 2019, IEEE Cloud Work-in-Progress 2018, MOMAC 2016
- Conference Reviewer - FORMATS 2019, IEEE CLOUD 2018-2019, ICCPS 2017-2019, RTSS 2017, EMSOFT 2017-2018, DAC 2016, DAC 2013-2014, DATE 2013-2017, RTAS 2014, ASAP 2014, CODES+ISSS 2014, SCOPES 2014, ESTIMedia 2014, MMSP 2011
- Expert Reviewer - EMSOFT 2014
- Journal Reviewer - IEEE Transactions on Multimedia, Pattern Recognition, IEEE TCAS, VLSI Design, Journal of Multimedia, ACM TECS, IEEE TCAD, ACM Computing Surveys, IEEE Computer, ACM TODAES

References

- Insup Lee University of Pennsylvania lee@cis.upenn.edu
Phone No: +12158983532
- Oleg Sokolsky University of Pennsylvania sokolsky@cis.upenn.edu
Phone No: +12158984448
- Roger Zimmermann National University of Singapore rogerz@comp.nus.edu.sg
Phone No: +6565167949