

2021 15th IEEE/ACM International Symposium on Networks-on-Chip (NOCS 2021)

**Virtual Conference
8 – 15 October 2021**



**IEEE Catalog Number: CFP21NOC-POD
ISBN: 978-1-6654-1722-8**

**Copyright © 2021, Association for Computing Machinery (ACM)
All Rights Reserved**

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP21NOC-POD
ISBN (Print-On-Demand):	978-1-6654-1722-8
ISBN (Online):	978-1-6654-1721-1
ISSN:	2474-3720

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2021 15th IEEE/ACM International Symposium on Networks-on-Chip (NOCS) **NOCS 2021**

Table of Contents

Message from the Chairs .vii.....
Committees .ix.....

NOCS Regular Session I: NoCs for DNN Accelerators

A Novel Network Fabric for Efficient Spatio-Temporal Reduction in Flexible DNN Accelerators .1.....
Francisco Muñoz-Martínez (Universidad de Murcia), José L. Abellán (Universidad Católica de Murcia), Manuel E. Acacio (Universidad de Murcia), and Tushar Krishna (Georgia Institute of Technology)

Analysis of On-chip Communication Properties in Accelerator Architectures for Deep Neural Networks .9.....
Hana Krichene (Université Paris-Saclay, CEA, List) and Jean-Marc Philippe (Université Paris-Saclay, CEA, List)

NewroMap: Mapping CNNs to NoC-interconnected Self-Contained Data-Flow Accelerators for Edge-AI .15.....
Jan Moritz Joseph (RWTH Aachen University), Murat Sezgin Baloglu (RWTH Aachen University), Yue Pan (Georgia Institute of Technology), Rainer Leupers (RWTH Aachen University), and Lennart Bamberg (GrAI Matter Labs)

NOCS Regular Session II: Security and NoC Routing

Packet Header Attack by Hardware Trojan in NoC based TCMP and Its Impact Analysis .21.....
Vedika J. Kulkarni (Indian Institute of Technology Guwahati), Manju R. (Indian Institute of Technology Guwahati), Ruchika Gupta (Indian Institute of Technology Guwahati), John Jose (Indian Institute of Technology Guwahati), and Sukumar Nandi (Indian Institute of Technology Guwahati)

Securing Network-on-Chips via Novel Anonymous Routing .29.....
Amin Sarihi (New Mexico State University), Ahmad Patooghy (North Carolina A&T State University), Mahdi Hasanzadeh (Independent Scholar), Mostafa Abdelrehim (California State University at Bakersfield), and Abdel-Hameed A. Badawy (New Mexico State University)

Denial-of-Service Attack Detection using Machine Learning in Network-on-Chip Architectures.35...
Chamika Sudusinghe (University of Moratuwa, Sri Lanka), Subodha Charles (University of Moratuwa, Sri Lanka), and Prabhat Mishra (University of Florida, USA)

NOCS Regular Session III: NoC Design for Modern Systems

PlugSMART: A Pluggable Open-Source Module to Implement Multihop Bypass in Networks-on-Chip. 41

Alireza Monemi (Barcelona Supercomputing Center, Barcelona, Spain), Iván Pérez (University of Cantabria, Santander, Spain), Neiel Leyoa (Barcelona Supercomputing Center, Barcelona, Spain), Enrique Vallejo (University of Cantabria, Santander, Spain), Ramón Beivide (University of Cantabria, Santander, Spain), and Miquel Moretó (Barcelona Supercomputing Center, Barcelona, Spain)

DUB: Dynamic Underclocking and Bypassing in NoCs for Heterogeneous GPU Workloads .49.....

Srikant Bharadwaj (Advanced Micro Devices), Shomit Das (Advanced Micro Devices), Yasuko Eckert (Advanced Micro Devices), Mark Oskin (University of Washington), and Tushar Krishna (Georgia Institute of Technology)

Worst-Case Latency Analysis for the Versal NoC Network Packet Switch .55.....

Ian Lang (University of Waterloo), Nachiket Kapre (University of Waterloo), and Rodolfo Pellizzoni (University of Waterloo)

Synthesis of Predictable Global NoC by Abutment in Synchoros VLSI Design .61.....

Jordi Altayó González (KTH Royal Institute of Technology), Dimitrios Stathis (KTH Royal Institute of Technology), and Ahmed Hemani (KTH Royal Institute of Technology)

NOCS Regular session IV: Secure NoC-based Systems

Sentry-NoC: A Statically Scheduled NoC for Secure SoCs .67.....

Ahmed Shalaby (National University of Singapore), Yaswanth Tavva (National University of Singapore), Trevor E. Carlson (National University of Singapore), and Li-Shiuan Peh (National University of Singapore)

Multilayer NoC Firewall Services: Case-Study on E-Health .75.....

Miltos D. Grammatikakis (ECE Dept, Hellenic Mediterranean University, Greece), Voula Piperaki (AISE Lab, Hellenic Mediterranean University, Greece), and Antonis Papagrighoriou (AISE Lab, Hellenic Mediterranean University, Greece)

Author Index 83