

Subodha CHARLES

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EDUCATION

University of Florida

Doctor of Philosophy, Computer Science

Dissertation: Design of Secure and Trustworthy Network-on-Chip Architectures

Advisor: [Dr. Prabhat Mishra](#)

GPA: 4.0/4.0

Gainesville, FL, USA

December 2020

University of Moratuwa

Bachelor of Science, Electronic and Telecommunication Engineering

GPA: 3.92/4.20

Colombo, Sri Lanka

September 2015

WORK EXPERIENCE

January 2021 - Present
Colombo, Sri Lanka

Senior Lecturer

Dept. of Electronic & Telecommunication Engineering, University of Moratuwa

Teaching: EN3240 - Embedded Systems Engineering

Research: Hardware Security & Trust, Embedded Systems, Computer Architecture

February 2013 - Present
Colombo, Sri Lanka

Chief Executive Officer

Alta Vision (Pvt) Ltd.

Co-founder, Member of board - www.altavision.lk

August 2016 - December 2020
Gainesville, FL, USA

Research Assistant

Embedded Systems Lab, University of Florida

Researched on system-on-chip architecture optimization with 4-way interoperability constraints - security, power, performance and area.

May 2017 - August 2017
Portland, OR, USA

Graduate Technical Intern

Strategic CAD Labs, Intel Corporation

Worked on Power and performance validation of power control algorithms.

November 2013 - May 2014
Colombo, Sri Lanka

Trainee Associate Electronics Engineer

Zone24x7 (Pvt) Ltd.

Developed an optical character recognition tool for handwritten and printed pages.

HONORS AND AWARDS

2020 Outstanding Achievement Award 2020 from the Herbert Wertheim College of Engineering, UF.

2019 IEEE MGA Young Professionals (YP) Achievement Award for substantial contributions to Students/YPs.

2019 Harris Corporation Communication Graduate Fellowship for outstanding PhD students in CISE, UF.

2018 Travel grant from National Science Foundation (NSF) to attend IGSC 2018.

2016 Received full assistantship for PhD program in Computer Science (CISE) from University of Florida.

2015 IEEE "Larry K. Wilson" award for the best student volunteer of Asia-Pacific Region.

2010-2014 "Mahapola" merit scholarship to pursue undergraduate studies by the government of Sri Lanka.

2009 Dialog Axiata merit scholarship for top performance in Advanced Level examination in Sri Lanka.

BOOKS

[1] P. Mishra and S. Charles (Editors), [Network-on-Chip Security and Privacy](#), Springer, 2021.

PATENTS AND COPYRIGHTS

[2] P. Mishra, S. Charles and V. Bindschaedler, [Securing On-Chip Communication using Digital Watermarking](#), U.S. Provisional Patent Application Serial No. 63/115,716, filed November 19, 2020.

[3] P. Mishra and S. Charles, [Reconfigurable Network-on-Chip Security Architecture](#), U.S. Utility Patent Application Serial No. 17/092,703, filed November 9, 2020.

- [4] S. Charles and P. Mishra, **Lightweight and Trust-aware Routing in NoC based SoC Architectures**, *U.S. Utility Patent Application Serial No. 16/934,612*, filed July 21, 2020.
- [5] P. Mishra, S. Charles and Y. Lyu, **Securing System-on-Chip using Incremental Cryptography**, *U.S. Non-Provisional Patent Application Serial No. 16/915,021*, filed June 29, 2020.
- [6] S. Charles and P. Mishra, **Lightweight Encryption and Anonymous Routing in NoC based SoCs**, *U.S. Utility Patent Application Serial No. 16/937,882* filed July 24, 2020.
- [7] P. Mishra, S. Charles and Y. Lyu, **Real-Time Detection and Localization of DoS Attacks in NoC based SoC Architectures**, *U.S. Utility Patent Application Serial No. 16/913,850*, filed June 26, 2020.

PUBLICATIONS

- [8] S. Charles and P. Mishra, **A Survey of Network-on-Chip Security Attacks and Countermeasures**, *ACM Computing Surveys (CSUR)*, 2021.
- [9] Z. Pan, J. Sheldon, C. Sudusinghe, S. Charles and P. Mishra, **Hardware-Assisted Malware Detection using Machine Learning**, *Design Automation and Test in Europe (DATE)*, Grenoble, France, February 1-5, 2021.
- [10] S. Charles and P. Mishra, **Reconfigurable Network-on-Chip Security Architecture**, *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, 2020.
- [11] S. Charles, Y. Lyu and P. Mishra, **Real-time Detection and Localization of Distributed DoS Attacks in NoC based SoCs**, *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, 2020.
- [12] S. Charles and P. Mishra, **Lightweight and Trust-aware Routing in NoC Based SoCs**, *IEEE Annual Symposium on VLSI (ISVLSI)*, Limassol, Cyprus, July 6-8, 2020.
- [13] S. Charles and P. Mishra, **Securing Network-on-Chip Using Incremental Cryptography**, *IEEE Annual Symposium on VLSI (ISVLSI)*, Limassol, Cyprus, July 6-8, 2020.
- [14] S. Charles, M. Logan and P. Mishra, **Lightweight Anonymous Routing in NoC based SoCs**, *Design Automation and Test in Europe (DATE)*, Grenoble, France, March 9 - 13, 2020.
- [15] S. Charles, A. Ahmed, U. Ogras and P. Mishra, **Efficient Cache Reconfiguration using Machine Learning in NoC-based Many-Core CMPs**, *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, 2019.
- [16] S. Charles, Y. Lyu, P. Mishra, **Real-time Detection and Localization of DoS Attacks in NoC based SoCs**, *Design Automation and Test in Europe (DATE)*, Florence, Italy, March 25 - 29, 2019.
- [17] S. Charles, H. Hajimiri and P. Mishra, **Proactive Thermal Management using Memory-based Computing in Multicore Architectures**, *Intl. Green and Sustainable Computing Conference (IGSC)*, Pittsburgh, October 22-24, 2018.
- [18] S. Charles, C. Patil, U. Ogras and P. Mishra, **Exploration of Memory and Cluster Modes in Directory-Based Many-Core CMPs**, *IEEE/ACM International Symposium on Networks-on-Chip (NOCS)*, Torino, Italy, October 4-5, 2018.

TEACHING EXPERIENCE

- Embedded Systems, University of Florida Spring 2019
- Advanced Data Structures, University of Florida Fall 2018
- Computer Organization, University of Florida Fall 2016, Spring 2017, Fall 2017, Spring 2018
- Digital Electronics, University of Moratuwa Summer 2015
- Robotics Design and Competition, University of Moratuwa Spring 2015
- Computer Networks, IESL College of Engineering Spring 2015

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- Reviewer, Design Automation Conference (DAC) 2018, 2019, 2020
- Reviewer, International Conference On Computer Aided Design (ICCAD) 2019, 2020
- Member of IEEE (Institute of Electrical and Electronics Engineers) 2012 - Present
 - Member-at-large of IEEE Entrepreneurship Steering Committee Jan. 2021 - Present
 - Member of IEEE MGA Student Activities Committee Jan. 2021 - Present
 - Secretary of IEEE Sri Lanka Section Feb. 2021 - Present
 - Regional Student Representative, IEEE Region 3 Dec. 2019 - Dec. 2020
 - Vice Chair, Education & Awards of IEEE Entrepreneurship Steering Committee Apr. 2019 - Dec. 2020
 - Vice Chair, Social Impact of IEEE Entrepreneurship Steering Committee Apr. 2018 - Mar. 2019
 - Member of IEEE Industry Applications Society council and south asia area chair Jan. 2017 - Jan. 2019
 - Student activities committee chair of IEEE Sri Lanka Section 2016-2017
 - Secretary of IEEE Asia Pacific congress, Colombo, Sri Lanka 2015
 - Sectional student representative of IEEE Sri Lanka Section 2014-2015
 - Represented Sri Lanka in IEEE Sections Congress 2017 in Sydney, Australia, IEEE Sections Congress 2014 in Amsterdam, Netherlands, IEEE Asia Pacific congress 2013 in Hyderabad, India.