HYUNSUK NAM, Ph.D.

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AUTHORIZATION TO WORK

- Permanent Resident of the USA

- Authorized to Work in the USA without sponsorship

EDUCATION

Ph.D. May 2017, Electrical and Computer Engineering, University of Arizona, Tucson, AZ, USA
Dissertation: Security-driven Design Optimization of Mixed Cryptographic Implementations in Distributed, Reconfigurable, and Heterogeneous Embedded Systems
Ph.D. Student 2010 – 2012, Electrical Engineering, Arizona State University, Tempe, AZ, USA
M.S. February 1999, Information and Communication Engineering, Chungbuk National University, South Korea
B.S. February 1997, Computer and Communication Engineering, Chungbuk National University, South Korea

RESEARCH & INDUSTRY EXPERIENCE

Senior Researcher, February 2019 – Present
Software Policy Research Institute (SPRi), South Korea
https://www.spri.kr/spri/eng_index.html

- Conduct cutting-edge research on data analysis and technology policy, specializing in areas such as artificial intelligence, immersive technology, and the Internet of Things.

- Identify key trends and potential regulatory gaps to inform policy recommendations and strategic planning initiatives.

Ph.D. May 2012 – May 2017
Teaching Assistant, 2012
Electrical and Computer Engineering, University of Arizona, Tucson, AZ, USA

- Developed and implemented a system model and optimization framework for security and energy

consumption in embedded systems.

- Conducted research on Security-Aware Multi-Objective Optimization of Distributed Embedded Systems.

- Investigated power reduction in FPGA interconnects and vehicle recognition using machine learning techniques.

<u>Course works</u>

ECE 576: Engineering Computer-Based System
ECE 506: Reconfigurable Computing (FPGA)
ECE 578: Fundamental of Computer Network
SIE 531: Simulation Modeling and Analysis
SIE 546: Algorithms Graph and Networks

Ph.D. student August 2010 – May 2012

Electrical Engineering, Arizona State University, Tempe, AZ, USA

- Implementation of Turbo Decoder and LDPC Decoders

- Research on Wireless Communication

<u>Course works</u>

EEE 553: Coding and Cryptography
EEE 558: Wireless communications
EEE 551: Information Theory
EEE 554: Random Signal Theory
EEE 556: Detection/Estimation

Senior SW Engineer April 2001 – June 2007

SAMSUNG ELECTRONICS COMPANY, LTD., South Korea

- Developed and Certified High-Performance Transceiver Algorithms
    - Led the development and certification of high-performance transceiver algorithms for GSM900 and DCS1800 modem applications.
    - Conducted algorithm analysis, software development, porting, debugging, integration testing, and field testing to ensure compliance and performance.

- Optimized MIPS-Based Receiver
    - Optimized a MIPS-based receiver, including channel codec and equalizer, through efficient Teak assembly and C programming.

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PUBLICATIONS

1. H. Nam, J. Jang, J. M. Kim, "A Study on the Analysis of Artificial Intelligence in the Domestic Public Sector based on Big Data", *Korea Society of IT Services*, 2023.

2. H. Nam, R. Lysecky, "Security-Aware Multi-Objective Optimization of Distributed Reconfigurable Embedded Systems", Journal of Parallel and Distributed Computing, Volume 133, pp. 377-390, November 2019.

3. H. Nam, R. Lysecky, "Mixed Cryptography Constrained Optimization for Heterogeneous, *Multicore, and Distributed Embedded Systems, Computers*", Volume 7, No. 2, 22 pages, April 2018.

4. H. Nam, R. Lysecky, Latency, "Power, and Security Optimization in Distributed Reconfigurable Embedded Systems", *Reconfigurable Architecture Workshop (RAW),* pp.124-131, May 2016.

5. H. Kwon, J. Kim, J. Rim, D. Kim, W. Suk, J. Kim, S. Hwang, H. Nam, K. Kim, Y. Kim, and S. Chung, "Development Platform Implementation and Verification for UMTS UE MODEM", *15th Annual IEEE International ASIC/SOC Conference,* September 2002.

6. H. Nam, D. Kim, and Y. You, "A Design of a Direct Digital Frequency Synthesizer with an Array Type CORDIC Pipeline", *Journal of the Institute of Electronics Engineers of Korea*, May 1999.

7. H. Nam and Y. You, "A CORDIC-based Direct Digital Frequency Synthesizer Design", *ASIC Design Workshop of the Institute of Electronics Engineers of Korea*, 303-304, November. 1998.

8. H. Nam, Y. You, "A Design of a DDFS with an Array Type Pipelined CORDIC", *Cad and VLSI design of the Institute of Electronics Engineers of Korea*, 165-170, May 1998.

9. H. Nam, Y. You, "A high-speed Direct Digital Frequency Synthesizer using CORDIC*", Conference of the Korea Information and Communications Society.* 729-732, November 1997.

10. H. Nam, Y. You, "Optimization with pipeline processor stage for a CORDIC," *CAD and VLSI Design of The Institute of Electronics Engineers of Korea*, 160-165, April 1997.

TECHNICAL REPORT

Issue Reports

1. H. Nam, N. Kwak, "Analysis of Metaverse Policy Trends in Major Countries", IS-166, 12.19.2023.

2. H. Nam, M. An, "Research of Artificial Intelligence Usage in Public Sector", RE-156, Feb. 2023.

3. H. Nam, "Prospects of Top 10 SW industry issues in 2023", RE-154, 09.22. 2023.

4. H. Nam, et al., "Analysis and Implications on the Use of the Artificial Intelligence by the Public Sector in the Domestic and Foreign Countries", IS-157, 03.21. 2023.

5. H. Nam, L. Jeon, "Prospects of Top 10 SW industry issues in 2023", IS-155, 12.22. 2022.

6. J. Kim, H. Nam, "Outlook for the Top 10 Issues in the SW Industry in 2022", RE-128, 05.25. 2022.

7. D. Lee, H. Nam, M. Choi, "A Study on the establishment of the artificial intelligence statistics system", RE-125, 05.25. 2022.

11. H. Nam, "The use and status of XR space in architecture and real estate during the non-face-to-face era", IS-105, 10.07. 2021.

12. H. Nam, "Analysis of the technical level of patent agent for Global XR Companies", IS-120, 07.28. 2021.

13. H. Nam, "In-depth Research and Analysis of Trends in Digital Content Markets Abroad in 2020", RE-107, 04.13. 2021.

14. H. Nam, "Technology Trends of Digital Holography Companies in the Medical Care and Automotive Industries", 04.28. 2020.

15. S. Lee, H. Nam, H. Kim, "Policies for Immersive Industry Development", RE-091, 04.21. 2020.

16. S. Lee, H. Nam, H. Kim, "Emergence of Immersive Economy and Spillover Effect", 10.08. 2019.

17. S. Lee, H. Nam, "The War for Immersive Contents Platform", 06.18. 2019.

PATENTS

1. H. Nam and S. Kim, Blind Detection method and apparatus, and communication receiver, Korean Patent 10-0611507-0000 issued August 04, 2006, United States Patent US 20060176981 issued August 10, 2006, European Patent EP 1694015B1 issued September 01, 2008.

2. H. Nam, Y. You, and D. Kim, Design of DDFS using CORDIC, Korean Patent 10-0295099-0000 issued April 24, 2001.

3. D. Kim and H. Nam, A direct digital frequency synthesizer, Korean Patent 10-2000-0031136 issued June 05, 2001.

SKILLS FOR DETAILS

- Assembly languages: Motorola CEVA-Teak, CEVA-TeakLite, and StarCore DSP

- High-Level Languages: Aetna, C/C++ Programming, VHDL, Verilog, SystemC, Python

- Algorithm development environments: MATLAB

- Design automation tools: ModelSim

- Equipment for testing wireless communication: Agilent 8960, Racal Instruments 6113, Raspberry Pi board, Xilinx Spartan-3E FPGA board

- Android application programming: Java