FAST National University (NUCES),
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Hassan Saif

PEC: ELECT/ 35814; CV updated: 29 Mar, 2021

SHORT BIOGRAPHY

Hassan Saif received his B.S. degree in electrical engineering from the University of Engineering and Technology, Lahore, Pakistan, and the M.S leading to Ph.D. in electronics engineering from Sungkyunkwan University, South Korea, in 2012 and 2020 respectively. He has been involved in a number of research and industrial projects. His current research interests include power management circuits, harvesting interface, DC-DC converters, switched capacitor networks, and low power electronics.

RESEARCH INTERESTS

Switched capacitor networks, Power Management Circuits, DC-DC Converters, Ultra-Low Power AFE, Analog & Mixed Circuit IC Design, Digital Integrated Circuits Design, VLSI Design, Bio-Medical Electronics, and Low Power Circuits.

EDUCATION

M.S leading to Ph.D. in Electronics and Electrical Engineering, Sungkyunkwan University, South Korea, Feb 2020
Dissertation: *Design of Wide Voltage and Current Range Energy Harvesting and Power Management Circuits for IoT Systems*
GPA: 4.3/4.5

BSc in Electrical Engineering, UET, Lahore, Pakistan, 2012
Final Year Project: Implementation of 300V variable DC-DC Converter for Motor Drive Control
GPA: 3.6/4.0

INDUSTRIAL EXPERIENCE

ASSISTANT MANAGER PRODUCTION
2 YEARS & 4 MONTHS

Newage Cables Private Limited, Lahore (Nov 2012 – Feb 2015)
Joined as "Quality Control Engineer", then promoted to "Assistant Manager Production".

Task Description (Quality Control Engineer)

- Supervise the cables and conductors testing according to IEC and WAPDA specifications.
- Assist Quality Control Manager during external party inspection and testing.
- Sampling and testing of in process items, to ensure compliance to the target specification.
- Visit sites in event of complaints and fault detection at installed cables/conductors.
- Conduct training sessions according to ISO standards.
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Task Description (Assistant Manager Production)

- Preparation of technical Job cards according to the technical specification of cables/ conductors.
- Prioritize orders according to specified timelines.
- Scheduling of Preventive & corrective maintenance work.
- Test reports checking to analyze and reduce failures.
- Analyze Monthly output of critical machines and provide proposals to improve efficiency.
- Deal parties regarding the up-gradation and procurement of new machinery.

JOURNAL PUBLICATIONS

1. **Hassan Saif,** Yongmin Lee, Hyeonji Lee, Minsun Kim, Muhammad Bilawal Khan, Jung-Hoon Chun and Yoonmyung Lee. "A Wide Load Current and Voltage Range Switched Capacitor DC–DC Converter with Load Dependent Configurability for Dynamic Voltage Implementation in Miniature Sensors". Energies 2018, 11(11), 3092; 08 Nov 2018. (**JCR I. F 2.707**)
2. MB Khan, DH Kim, JH Han, **H Saif**, H Lee, Y Lee, M Kim, E Jang, SK Hong et.al. "Performance improvement of flexible piezoelectric energy harvester for irregular human motion with energy extraction enhancement circuit". Nano Energy. Vol: 58, pp : 211-219, Apr 2019. (**JCR I. F 15.548**)

3. **Hassan Saif**, Muhammad Bilawal Khan, Jongmin Lee, Kyoungho Lee and Yoonmyung Lee. "A High-Voltage Energy-Harvesting Interface for Irregular Kinetic Energy Harvesting in IoT Systems with 1365% Improvement Using All-NMOS Power Switches and Ultra-low Quiescent Current Controller". Sensors 2019, 19(17), 3685; 24 Aug 2019. (**JCR I. F 3.076**)
4. Muhammad Bilawal Khan, **Hassan Saif**, and Yoonmyung Lee, "A Piezoelectric Harvesting Interface with Capacitive Partial Electric Charge Extraction for Energy Harvesting from Irregular High-Voltage Input", Energies 2018, 13(8), 1939; 15 Apr 2020. (**JCR I. F 2.707**)
5. M.B. Khan, D. H. Kim, J. H. Han, **H. Saif**, et al. "A Harvesting Circuit for Flexible Thin Film Piezoelectric Generator Achieving 562% Energy Extraction Improvement with Load Screening", IEEE Trans. Industrial Electronics, (Early Access), 2020. **(JCR I. F 7.515)**
6. J. Yousaf, W. Nah, E. R. Al Majali, **H. Saif,** H.Rmili, "Rapid characterization of efficient system level ESD protection strategy using coupling transfer function", Elsevier Microelectronics Journal, Volume 110, 2021. **(JCR I.F 1.405)**
7. M.B. Khan.; **H. Saif**; K. Lee; Y. Lee, "Dual Piezoelectric Energy Investing and Harvesting Interface for High-Voltage Input", Sensors 2021, 21, 2357. **(JCR I. F 3.275)**

SOUTH KOREAN PATENTS

1 Y. Lee, G. C. Shin, and **H. Saif**, "Module of voltage attenuation and the apparatus and the method for attenuating voltage", South Korea Patent Office, Application No. 1020180141919, 16 Nov, 2018.

2 Y. Lee, H. Lee, E. Jang, and **H. Saif**, "Module of voltage amplifier and method and apparatus for amplifying voltage", South Korea Patent Office, Application No. 1020180007727, 22 Jan, 2018.

3 Y. Lee, **H. Saif**, and Y. Yoon, "AN ELECTRONIC DEVICE INCLUDING A HARVEST CIRCUIT BEING INPUT APERIODIC SIGNAL", South Korea Patent Office, Application No. 1020190110129, 05 Sep, 2019.

PEER REVIEWED CONFERENCE PUBLICATIONS

ALL ARE PUBLISHED IN TOP INTEGRATED CIRCUITS (IC) DESIGN CONFERENCES

1. **Hassan Saif**, Y Lee, M Kim, H Lee, MB Khan, Yoonmyung Lee. "A wide load and voltage range switched-capacitor DC-DC converter with load-dependent configurability for DVS implementation in miniature sensors". IEEE Asian Solid-State Circuits Conference (A-SSCC), Nov. 2017, Seoul, South Korea.
2. H Lee, E Jang, **H Saif**, Y Lee, M Kim, MB Khan, Yoonmyung Lee. "A Sub-nW Fully Integrated Switched-Capacitor Energy Harvester for Implantable Applications". IEEE European Solid State Circuits Conference (ESSCIRC), Sept. 2018, Dresden, Germany.
3. **Hassan Saif**, MB Khan, Yoonmyung Lee. "A 17V-to-45V Input 25μW-to-10mW Output Power, 90.2%-Peak-Efficiency SC DC-DC Converter with Recursive Output Connection for High-Voltage Energy Harvesting". IEEE Custom Integrated Circuits Conference (CICC), Apr. 2019, Texas, USA.
4. Muhammad Bilawal Khan, **Hassan Saif**, Yoonmyung Lee. "Flexible Thin Film Piezoelectric Energy Harvester with 0.38nA Quiescent Current and up to 562% Energy Extraction improvement with Load Hiding for Powering Wearable Electronics with Irregular Human Motion" IEEE Asian Solid-State Circuits Conference (A-SSCC), Nov. 2019, Macau.

TOOLS, PACKAGES & LANGUAGES

- Cadence Tools Suite
- Hspice
- Synopsis
- Labview
- Mathematical modeling using Matlab
- Orcad and Allegro PCB design
- MS-Office
- MS Visio
- Origin

PROCESS DEVELOPMENT KITS (PDK'S) EXPERTISE

- **TSMC** 180nm Typical (Low) Voltage PDK
- **Samsung** 28nm Typical (Low) Voltage
- **Magnachip** 350nm High Voltage/Low Voltage PDK
- **Towerjazz** 350nm High Voltage/Low Voltage PDK

REFERENCES

- Prof. Dr. Yoonmyung Lee, Associate Professor Department of Electrical and Computer Engineering, Sungkyunkwan University, South Korea
  (Office: *+82-31-290-7979,* yoonmyung@skku.edu)
- Prof. Dr. Jung-Hoon Chun, Associate Professor Department of Electrical and Computer Engineering, Sungkyunkwan University, South Korea
  (Office: *+82-31-299-4596,* jhchun@skku.edu)
- Prof. Dr. Jae-Hyuk Choi, Associate Professor Department of Semiconductor Systems Engineering, Sungkyunkwan University, South Korea
  (Office: *+82-31-290-7979,* choix215@skku.edu)
- Dr. Kyoungho Lee, Principle Researcher, Korea Electrotechnology Research Institute
  (Office: *+82-55-280-1689,* khlee923@keri.re.kr)

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