# RAHUL KUMAR

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## EXPERIENCE

2019 – 2021

GRADUATE ASSISTANT, UNIVERSITI TEKNOLOGI PETRONAS (UTP) MALAYSIA.

2018 - 2019

DESIGN AND SITE ENGINEER, YH ASSOCIATES KARACHI, PAKISTAN.

2017-2018

INTERN, NED UNIVERSITY KARACHI, SINDH, PAKISTAN.

## **EDUCATION**

2019-2021

MSC, DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING UNIVERSITI TEKNOLOGI PETRONAS (UTP), PERAK, MALAYSIA.

- Received Graduate Assistantship
- Majored in Power Electronics
- Dissertation: A Design and Development of High Step-up Switched Z-source Converter with Minimal Components Count.

## **KEY COURSES AT MSC LEVEL:**

Research Methodology, Bi-annual postgraduate symposium (BAPC).

## TEACHING EXPERIENCE:

Conducting Tutorials and Labs for subjects such as, Power Electronics, Advanced Power Electronics, Power Systems, Electrical Machines, and Advanced Power Systems, etc.

## **EXPERIMENTAL WORK:**

Experimentally verified the newly developed design of the Z-source DC-DC converter which obtained the higher voltage gain at the reduced duty cycle, while utilizing minimal components count. Three different circuits were developed in this project. At first, the NE555 timer circuit for generating the gate signal. Secondly, the MOSFET driver circuit to drive the switches, and at the last, the proposed circuit was developed on the breadboard. The obtained results matched well with simulation and theoretical results which justifies the performance of the developed design.

#### 2013-2016

## **B.E. ELECTRICAL ENGINEERING,** QUEST UNIVERSITY, NAWABSHAH, SINDH, PAKISTAN.

- Graduated with 82.7 %.
- Final Year Project: Energy crises and its technical solutions in Pakistan.

#### **KEY COURSES AT UNDERGRADUATE LEVEL:**

Electronic devices and circuits, Basic Electrical Engineering, Instrumentation, Communication skills, Electromagnetic field theory, Network Analysis, Power Electronics, Power Generation, Power Transmission, Power Distribution, Electrical Machines (DC), AC Machines, Power System Economics, Digital Electronics, etc.

#### **PROJECTS AT UNDERGRADUATE LEVEL:**

- Energy crises and its technical solutions in Pakistan: (Final Year Project at Undergraduate)
- Development of DC motor.
- Case Study of 132 kV grid station Larkana, Sindh, Pakistan.
- Designing of DC-DC converter using Simulink and implementing experimental setup.
- 15 days internship at GUDU power plant Sindh, Pakistan.

## **SKILLS & TOOLS**

#### **SOFTWARES**

- MATLAB/Simulink
- PSIM

#### **RESEARCH TOOLS**

- Microsoft Visio
- Origin
- Latex

## **RESEARCH AREAS**

- Power Electronics
- Power system (Generation, Transmission)
- Renewable Energy

#### **EQUIPMENT EXPERTISE**

- Oscilloscope
- Function Generator
- Lab-Volt
- Power Supply (DC, AC)
- Multimeter

## CERTIFICATIONS

- Introduction to PSIM Webinar
- Conference paper publication certificate from NILAI University India.
- IELTS (6.5 bands)
- Research Methodology from UTP Malaysia
- Certificate for completion of Latex Workshop
- Certificate of Appreciation for organizing course "A 360 View of Project Management"
- Certificate of Appreciation for organizing course "Certified Procurement Professional"
- Certificate of Appreciation for organizing meeting of "Professionals HR" throughout Pakistan.
- Certificate of completion for the "Introduction to PSIM" webinar.
- Certificate of research paper Acceptance from MDPI Electronics.

## **PUBLICATIONS**

## JOURNAL

- Rahul Kumar, Ramani Kannan, Nursyarizal Bin Mohd Nor "A High Gain Switched Z-Source Converter with Reduced Passive Components Solid State Technology. Vol 63, issue 6, page no.18-19. <u>http://solidstatetechnology.us/index.php/JSST/article/view/3767</u>
- Rahul Kumar, Ramani Kannan, Nursyarizal Bin Mohd Nor "A High Step-Up Switched Z-Source Converter (HS-SZC) with Minimal Components Count for Enhancing Voltage Gain". Electronics 2021, 10(8), 924; <u>https://doi.org/10.3390/electronics10080924</u>
- Ghulam E Mustafa Abro, Gulbadin Khan Kakar, Rahul Kumar, Mudasar Zafar, "Maximum Power Point Tracking Using Perturb & Observe Algorithm For Hybrid Energy Generation", "Journal of Independent Studies and Research Computing, Volume 18 No 1 (2020) <u>https://doi.org/10.31645/19</u>
- Saba Javed, Ghulam E Mustafa Ab, Rahul Kumar"Piece-wise Linear Fuzzy Sliding Mode Controller for Deep Submergence Rescue Vehicle (DSRV) "Sir Syed University Research Journal of Engineering & Technology, No 2 (2021) <u>https://doi.org/10.33317/ssurj.371</u>
- 5. Rahul Kumar, Ramani Kannan, Nursyarizal Bin Mohd Nor "An Efficient Design of High Step-up Switched Z-source DC-DC Converter for Grid-Connected Inverters" (IN PROGRESS)

## **CONFERENCES**

- Rahul Kumar, Ramani Kannan, Jayasankari Ganasan, Ghulam E Mustafa Abro "Prototyping Proactive Wearable Gadget for the Surveillance of Coal Miners in Pakistan" International Virtual Conference on Artificial Intelligence for Smart Community 2020, (IVC-AISC 2020) <u>https://uevent.utp.edu.my/ivc-aisc2020/</u>
- Md. Tauhidul Islam, Ariful Islam, Rahul Kumar, Ghulam E Mustafa Abro "Design of a self-tuning PID controller for a temperature control system using Fuzzy Logic" International Virtual Conference on Artificial Intelligence for Smart Community 2020, (IVC-AISC 2020) <u>https://uevent.utp.edu.my/ivc-aisc2020/</u>
- Rahul Kumar, Ramani Kannan\*, Nursyarizal Bin Mohd Nor " An Enhanced Voltage gain switched Z-source Converter with Minimal Components" ESTCON 2020 <u>http://estcon.utp.edu.my/icias</u> (ACCEPTED)
- Ghulam E Mustafa Ab, Rahul Kumar\*, Zuhaina Zakaria, Suresh Kumar, Hybrid Control Design for Improvising the Performance of Multi-tap Variable Shunt Reactors" 2021 IEEE International Conference in Power Engineering Application (ICPEA) <u>10.1109/ICPEA51500.2021.9417766</u>

- Ghulam E Mustafa Abro, Maheshwari R, Rahul Kumar\*, Ariful Islam, Vipin Kumar
  "Dynamic Modeling of COVID-19 with an Impact of Lockdown in Pakistan and Malaysia 2021"
  IEEE International Conference on Signal and Image Processing Applications (ICSIPA) IEEE Xplore Proceedings. <u>https://doi.org/10.1109/ICSIPA52582.2021.9576795</u>
- Ghulam E Mustafa Abro, Maheshwari R, Rahul Kumar\* Saba Javed, Zain Anwar Ali, "Modeling, Controlling & Stabilization of Underactuated Air-Cushion Vehicle (Acv)", 2021 IEEE International Conference on Signal and Image Processing Applications (ICSIPA) IEEE Xplore Proceedings <u>10.1109/ICSIPA52582.2021.9576785/</u>

## DISTINCTIONS

• Award of Graduate Assistantship (GA) full scholarship offered by one of the leading research institutes in the world UTP Malaysia.

## **PROFESSIONAL AFFILIATION**

• Pakistan Engineering Council (Registered Engineer)

## REFERENCES

- 1. Dr. Dileep Kumar State Key Laboratory of Industrial Control Technology, College of Control Science and Engineering, Zhejiang University, Hangzhou 310027, China. (<u>d.k@zju.edu.cn</u>)
- 2. Associate Professor Ghulam Sarwar Kaloi Electrical Engineering Department, QUEST Nawabshah, Sindh, Pakistan. (ghulamsarwar.kaloi@quest.edu.pk)
- Senior Lecturer, Muhammad Aadil Siddiqui Faculty of Information & Communication Technology, BUITEMS, Quetta, Pakistan. (muhammad.aadil@buitms.edu.pk)