## **CURRICULUM VITAE**

#### VIKAS KUMAR RATHORE

Address: H.NO. 291B, Nankari, IIT Kanpur, Uttar Pradesh, Pin: 208016 E-Mail: rathore@post.bgu.ac.il, vikasrthr47@gmail.com LinkedIn ID: https://www.linkedin.com/in/vikas-rathore-60501b168/ Mobile: +91 - 8802040929

#### **EDUCATION**

Ph.D Centre of Power Electronics and Mixed-Signal (PEMIC) Ben-Gurion University of the Negev, Israel Specialization: Power Electronics (Electrical Engineering) Advisor: Prof. Mor Peretz and Dr.Michael Evzelman (Grade Point: 9.0)	01/2021-02/2025
Master of Technology Indian Institute of Technology (IIT), Dhanbad, India Specialization: Power Electronics and Electrical Drives Advisor: Prof. P. Sensarma (IIT Kanpur) and Prof. K.C Jana (IIT Dhanbad) (Grade: OGPA 8.38)	07/2016-05/2018
<b>Thesis/Project Work</b> Indian Institute of Technology (IIT), Kanpur, India Thesis title: "Communication Module for Power Electronics Converter" Advisor: Prof. P. Sensarma (IIT Kanpur) (Thesis Grade:8.25/10)	06/2017-06/2018
<b>Bachelor of Technology</b> HNB Garhwal University, Srinagar, Uttarakhand, India Specialization: Electronics and Communication Engineering Final Grade: 76.2% (First Class with Honours)	05/2011-06/2015
Senior Secondary School Examination, CBSE Class (XII <sup>th</sup> ) Kendriya Vidyalaya, IIT Kanpur, India (Grade :77.4%)	06/2009-05/2010
Secondary School Examination, CBSE Class (X <sup>th</sup> ) Kendriya Vidyalaya, IIT Kanpur, India (Grade :68.2%) WORK EXPERIENCE	06/2007-05/2008
JRF (Junior Research Fellow) Indian Institute of Technology (IIT), Kharagpur, India Project: Development of Scalable GaN-Based Distributed Dynamic Power Management System for IoT Applications with On-Demand Thermal Management	07/2019-07/2020
<b>Science Teacher</b> Worked as Maths/Science Teacher in Sri Radha Sanskrit H.S School Nighoha, Nankari IIT Kanpur (Uttar Pradesh), India	11/2018-07/2019
Project Engineer Indian Institute of Technology (IIT), Kanpur, India Project: RE-Synchronizable Grid Interactive Inverter for Indian Rooftop Solar PV System Advisor: Prof. P. Sensarma	07/2018-10/2018

### **ROLE IN RELEVANT FEDERAL PROJECTS**

#### **Project 1: Supported by Israel Science Foundation and Israel Ministry of Energy** Primary research:

**ROLE 1:** Designed 125W Non-isolated Boost Converter having high conversion ratio using back-end series capacitor stacking approach. This converter reaches a maximum efficiency of 95.5% at an input voltage of 20V and an output voltage of 210V. [1]

**ROLE 2:** Developed 200W high power density coupled inductor-based boost extender converter having maximum efficiency of 94.5 %. [2]

**ROLE 3:** Proposed an efficient first stage interleaving technique for Boost Extender topology to reduce high current stress of the first boosting stage. [3]

**ROLE 3:** Designed and tested several EE based coupled inductor design to increase the power density and reduce volume of Boost extender topology. [4], [5]

### Project 2: Development of Scalable GaN-Based Distributed Dynamic Power Management System for IoT Applications with On-Demand Thermal Management (IIT Kharagpur) 2019

**ROLE 4:** Designed hardware prototype of two Stage Multi-Phase Buck Converter using GaN FET to achieve the electric power delivery requirements of Automotive Applications.

# *Project 3: RE-Synchronizable Grid Interactive Inverter for Indian Rooftop Solar PV System* (*IIT Kanpur*)

2018

01/2021-02/2025

**ROLE 5:** Developed a dedicated TCP/IP interface for transmitting short-term operational date, resident in the main controller of a power electronic converter, to a central data hub for site and system monitoring purposes.

**ROLE 6:** Worked on harmonic traps for Power Line Carrier Communication (PLCC) to enable modern power electronics converters to communicate data.

#### **PUBLICATIONS**

[1]. V. K. Rathore, M. Evzelman and M. M. Peretz, "Non-Isolated High Conversion Ratio Boost Extender Based on Back-end Series Capacitor Stacking," 2022 IEEE 23<sup>rd</sup> Workshop on Control and Modeling for Power Electronics (COMPEL), Tel Aviv, Israel, 2022.

[2]. V. K. Rathore, M. Evzelman and M. M. Peretz, "Coupled Inductor Based Non-Isolated High Conversion Ratio Boost Extender," 2023 IEEE Applied Power Electronics Conference and Exposition (APEC), Orlando, FL, USA, 2023.

[3]. V. K. Rathore, M. Evzelman and M. M. Peretz, "Interleaving Boost Extender Topology," 2022 IEEE 24<sup>th</sup> Workshop on Control and Modeling for Power Electronics (COMPEL), Ann Arbor, Michigan, USA 2023.

[4]. V. K. Rathore, M. Evzelman and M. M. Peretz, "Coupled Inductor Design Methodology for Optimization of Boost Extender Topology," 2024 IEEE Applied Power Electronics Conference and Exposition (APEC), Long Beach, California USA, 2024.

[5]. V. K. Rathore, M. Evzelman and M. M. Peretz, "Coupled Inductor Analysis and Finite Element Modeling Assisted Design for Boost Extender Topology," 2025 IEEE Applied Power Electronics Conference and Exposition (APEC), Atlanta, Georgia, USA, 2025. (To be Published)

#### **TECHNICAL SKILLS**

- Key Skills: DC-DC topology selection, Coupled Inductor design, Magnetic design, Hardware design, CAD design.
- Simulation: MATLAB Simulink, OrCAD (Pspice), PSIM, Altium, Electromagnetic Simulation (Ansys Maxwell).
- **Programming:** MATLAB, Verilog, C.
- **Experimentation:** Hand on experience in PCB Soldering, Assembling and Testing hardware prototype. Experience in performing bench electrical measurements using signal generators, DVMs, and oscilloscopes.

 Switch mode DC-DC Converters, High Efficiency power conversion technology, Control for renewable energybased systems

#### ACHIEVEMENTS AND EXTRACURRICULAR ACTIVITIES

- Received <u>President Award</u> for being a true member of the family of SCOUT BROTHERHOOD by President of India <u>Smt. Pratibha Devi Singh Patil</u> in 2009.
- Won Kreitman Fellowship of Ben-Gurion University of the Negev, Israel on 07/2020.

#### **INTERNSHIPS**

- Attended GIAN course at **IIT Guwahati** on "*Design of Electrical Vehicle*" from 29 Nov-9 Dec 2016., Advisor: Prof. Karuna Kalita (IIT Guwahati), **Grade Point: 9.0**.
- Attended GIAN course at **IIT Kharagpur** on "*ULSI Technology and Nanoelectronics Devices*" 19 Dec-24 Dec 2016., Advisor: Prof. Samit K. Ray (IIT Kharagpur).
- Under SURGE Program at **IIT Kanpur** completed an internship on the topic "*Line Traps for Power Line Communication in Smart Micro-Grid*"., Advisor: Prof. P. Sensarma (IIT Kanpur).
- Implemented "Low Cost Mobile Charger" as a part Power Electronics Lab Activity in 2013., Advisor: Prof. Santanu Mishra (IIT Kanpur).

#### AWARDS

- Qualified **ISMEE** (**ISM Entrance Examination**) A National Level Engineering Entrance examination (2015) with <u>All India Rank (AIR) 42</u> in the subject of EE- Electrical Engineering.
- Secured overall Band Score of 6.5 in IELTS (Academic) Exam in 2019.

#### **LEISURE INTERESTS**

- Meditation, Gym
- Listening Songs, Cooking

#### **PERSONAL INFORMATION**

- Nationality: Indian
- Date of Birth: 20 March, 1993
- Place of Birth: Pilibhit, Uttar Pradesh, India
- Gender: Male
- Marital Status: Single
- Languages: English, Hindi

I hereby, declare that the information furnished above is true to the best of my knowledge.

Vikas Kumar Rathore Date: November 2024