

Personal Profile



Dr. Kurmendra
Assistant Professor, Department of Electronics and
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Educational Profile

Ph.D.	NERIST, Nirjuli, Arunachal Pradesh; 2021 Supervisor: Prof. (Dr.) Rajesh Kumar
M.Tech	NIT, Silchar, Assam; 2015 Subject: Electronics and Communication Engineering Specialization: Microelectronics and VLSI Design
B.Tech	Uttar Pradesh Technical University, Lucknow, Uttar Pradesh; 2012 Subject: Electronics and Communication Engineering

Professional Experience

Assistant Professor (Level-11) , Department of ECE, Rajiv Gandhi University, Arunachal Pradesh, India	22 March, 2021 -till date
Assistant Professor (Level-10) , Department of ECE, Rajiv Gandhi University, Arunachal Pradesh, India	22 March, 2016- 21 March, 2021
Guest Assistant Professor , Department of ECE, MNNIT, Allahabad, Uttar Pradesh, India	31 July, 2015- 10 February, 2016

Administrative Experience

Departmental Research Council (DRC) Member , Department of ECE, Rajiv Gandhi University, Arunachal Pradesh, India	2021 – till Date
BPGS Member (ECE) , Rajiv Gandhi University, Arunachal Pradesh, India	July, 2019-till date
Departmental IQAC Coordinator , Rajiv Gandhi University, Arunachal Pradesh, India	2018 – till date

Departmental SWAYAM Coordinator, Rajiv Gandhi University, Arunachal Pradesh, India	2018 -till date
Departmental NAAC Coordinator, Rajiv Gandhi University, Arunachal Pradesh, India	2018-till date

Awards & Honours

1. Outstanding Presenter Award, Universiti Malaysia Perlis, Malaysia (2019)
2. GATE-MHRD fellowship by MHRD, Govt. of India, (2013-2015)
3. Excellence Attendance Award, AKG Engineering College, Ghaziabad (2009)
4. Qualified GATE in 2012,2013,2014, 2015 & 2016 consecutively five times.

Membership of Professional Bodies

1. American Chemical Society (ACS) Member (2021-till date)
2. IAASSE, USA (2020- till date)
3. Member of IEEE, New York, USA (2013-till date)

Research Interests

- RF MEMS
- MEMS Biosensors
- Semiconductor Devices
- Quantum Dots

Research Publications (Journals)

1. RF Micro-electro-mechanical system (MEMS) Capacitive Switch Performance Parameters and Improvement Strategies: Kurmendra, Kumar, R.; *Microsystem Technologies*. **SCI IF: 2.276**
2. Nanomaterial gas sensors for biosensing applications: A Review: Kurmendra; *Recent patents on Nanotechnology*, **2021 SCI IF: 1.952**
3. Materials Selection Approaches and Fabrication Methods in RF MEMS Switches: Kurmendra; Kumar, R.; *Journal of Electronic Materials*. **2021, 50, 3149–3168. SCI IF: 1.938**
4. Investigations on beam membrane and dielectric materials using Ashby's methodology and their impact on the performance of a MEMS capacitive switch: Kurmendra; Kumar, R.; *Microsystem Technologies*. **2021(Online First) SCI IF: 2.276**
5. A review on RF micro-electro-mechanical-systems (MEMS) switch for radio frequency applications: Kurmendra; Kumar, R.; *Microsystem Technologies*. **2021, 27, 2525–2542. SCI IF: 2.276**
6. High speed optical switching gain based EDFA model with 30 Gb/s NRZ modulation code in optical systems: Mahmoud M. A. Eid; Ahmed Nabih Zaki Rashed; Kurmendra; *Journal of optical communications*. **2020, (Online First) SCOPUS**

7. Novel capacitance evaluation model for microelectromechanical switch considering fringe and effect of holes in pull-up and pull-down conditions: Kurmendra; Kumar, R.; *Microsystem Technologies*. **2020**, *26*, 873–884. **SCI IF: 2.276**
8. MEMS based cantilever biosensors for cancer detection using potential biomarkers present in VOCs: a survey: Kurmendra; Kumar, R.; *Microsystem Technologies*. **2019**, *25*, 3253–3267. **SCI IF: 2.276**
9. Design and Analysis of MEMS Shunt Capacitive Switch with Si₃N₄ Dielectric and Au Beam Material to Improve Actuation Voltage and RF Performance in Consideration with and without Circular Perforations: Kurmendra; Kumar, R.; *Transactions on Electrical and Electronic Materials*. **2019**, *20*, 299–308. **SCOPUS/ESCI**
10. Micro-cantilevered MEMS Biosensor for Detection of Malaria Protozoan Parasites: Kurmendra; Rahul, J.; Kumar, R.; *Journal of Computational Applied Mechanics*. **2019**, *50(1)*, 99–107. **SCOPUS/ESCI**
11. Design and simulation of mems shunt capacitive switch for lower switching time: Kurmendra; Kumar, R.; *3C Tecnología*. **2019**, *January 2019*, 167–178. **ESCI**
12. Analysis of MEMS based Micro-hot Plate for Gas Sensor: Rahul, J.; Kurmendra; *Journal of Semiconductor Devices and Circuits*. **2019**, *6(2)*, 1–5. **Peer reviewed**
13. Comparative Study of Microelectromechanical Switches for RF Applications: A Review: Kurmendra; Kumar, R.; *Journal of Semiconductor Devices and Circuits*. **2019**, *6(2)*, 6–12. **Peer reviewed**
14. Pull-in-voltage and RF analysis of MEMS based high performance capacitive shunt switch: Pertin, O.; Kurmendra; *Microelectronics Journal*. **2018**, *77*, 5–15. **SCI IF: 1.605**
15. Piezoelectric energy harvesters using MEMS Structures: A Review: Chamuah; A.; Kurmendra; Kumar, R.; *International journal for science and Advanced research in Technology*. **2018**, *4*, 610–614. **UGC Listed**
16. Design analysis, modeling and simulation of novel rectangular cantilever beam for MEMS sensors and energy harvesting applications: Kurmendra; Kumar, R.; *International Journal of Information Technology*. **2017**, *9*, 295–302. **SCOPUS**
17. Nonlinear study of Zinc Oxide quantum dot for optoelectronic Applications: Kurmendra; *Journal of Nanoscience and technology*. **2017**, *3*, 281–283. **UGC Listed**

Research Publications (Conference Proceedings)

18. Design and Simulation of Micro Cantilevers for Sensing Application: Kurmendra; American Institute of Physics (AIP) Conference Proceedings, **2022**, 1-9. **SCOPUS**
19. Dielectric Material Selection for High Capacitance Ratio and Low Loss in MEMS Capacitive Switch using Ashby's Methodology: Kurmendra; Kumar, R.; *IOP Conference Series: Materials Science and Engineering*, **2021**, *1020*, 1–8. **SCOPUS**

20. A modified capacitance model of shunt micro switch based on MEMS technology in actuation mode: simulation and analytical study: Kurmendra; Kumar, R.; *Journal of Physics: conference Series*, **2020**, 1432, 1–8. **SCOPUS**
21. A Novel Structure for Piezoelectric Based MEMS Energy Harvester: Chamuah; A.; Kurmendra; Kumar, R.; *IEEE Conference proceedings*, **2018**, 1–4. **SCOPUS**
22. Dependency of wavelength of CdSe, ZnS and GaAs quantum dots on dot radius: Quantum confinement effect: Kurmendra; Paul, M.; Mondal, D. K.; *IEEE Conference proceedings*, **2015**, 1–4. **SCOPUS**

Patent

1. Kurmendra; Kumar, Rajesh.: Micro-Electro-Mechanical-System (MEMS) shunt switch for radio frequency (RF) communication, Patent no. 202131030255, 2021 (Published).

Book/Book Chapter published

1. Kurmendra, Kumar, R.; Pertin, O.: Design of An Improved Micro-Electro-Mechanical-Systems Switch for RF Communication System, in *Recent Trends in Communication, Computing, and Electronics*, Eds. Khare A., Tiwary U., Sethi I., Singh N., Springer, Singapore, 2018, 3-13, 978-981-13-2685-1.

Research guidance

M. Tech. Thesis guidance

1. Ms. Osor Pertin, M. Tech.
Topic of research: Static and RF analysis of MEMS Capacitive Shunt Switch
Period: 2016-2017
2. Ms. Gora Yami, M. Tech.
Topic of research: High frequency MEMS resonator for RF communication applications
Period: 2016-17
3. Mr. Tabuk Tabing, M. Tech.
Topic of research: Study and anlysis of MEMS cantilever beam with different shapes and materials for sensing application
Period: 2016-17
4. Mr. Anil Chamuah, M. Tech.
Topic of research: A novel structure for piezoelectric based MEMS energy Harvester
Period: 2017-18
5. Mr. Shivnath Rai, M. Tech.
Topic of research: Design and simulation of Cantilever based biosensor for Malaria detection
Period: 2017-18

6. Mr. Udhav Kumar, M. Tech.
Topic of research: Simulation and analysis of microcantilever based biosensor for tuberculosis detection
Period: 2017-19
7. Mr. Dibakar Nath, M. Tech.
Topic of research: Some Study on performance improvement of RF MEMS Switches
Period: 2021-Ongoing

Ph.D scholar

1. Mr. Amar Bahadur Biswakarma
Topic of research: Biomedical Signal Processing
Year of PhD degree: 2021 - Ongoing

Course/Conference/Workshop organized

1. Five Days Faculty Development Programme on Moodle Learning Management System by Department of ECE, Rajiv Gandhi University, Arunachal Pradesh, India
Duration: 17/06/2020- 21/06/2020
Role: Co-Coordinator/Co-Convenor
2. National Seminar on Artificial Intelligence and Machine Learning: An Application Prospective by Department of ECE, Rajiv Gandhi University, Arunachal Pradesh, India
Duration: 05/03/2020- 06/03/2020
Role: Coordinator/Convenor
3. National Workshop on Golden Jubilee Engineer's Day by Department of ECE & CSE, Rajiv Gandhi University, Arunachal Pradesh, India
Duration: 15 September, 2017
Role: Coordinator/Convenor

Course/Conference/Workshop etc. attended

1. Delivered an oral presentation in 'National Conference on Emerging Trends in Physics (NCETP-2021)', held at Department of Physics, Tezpur University, Assam, India during 16th June, 2021.
Title of the presentation: Effect of dielectric material thickness on down state capacitance and switching time of electrostatic MEMS switch
2. Delivered an oral presentation in 'National Conference on Emerging Trends in Physics (NCETP-2021)', held at Department of Physics, Tezpur University, Assam, India during 16th June, 2021.

Title of the presentation: Effect of dielectric material thickness on down state capacitance and switching time of electrostatic MEMS switch

3. Delivered an invited talk in 'AICTE ATAL Academy Online FDP on "Cognitive Radio, Antennas and Millimeter wave Communications"', held at Saranathan College of Engineering, Tiruchirappalli, Tamilnadu, India during 07th – 11th June 2021.

Title of the presentation/talk: Millimeter-wave Communication systems – A Research Perspective

4. Delivered an invited talk in 'Short term course on 'Doing Research and Academic Writing', held at Department of English, Rajiv Gandhi University, Arunachal Pradesh, India during 07th – 15th March 2020.

Title of the presentation/talk: Research Publication and Plagiarism

5. Delivered an Oral presentation in 'Recent Trends in Communication, Computing, and Electronics (IC3E-2018)', held at University of Allahabad, Allahabad, India during 13 April-15 April, 2018.

Title of the presentation/talk: Design of An Improved Micro-Electro-Mechanical-Systems Switch for RF Communication System

6. Delivered an Oral presentation in 'International Conference on Green Computing and Engineering Technologies 2018', held at Aalborg University, Niels Bohrs Vej 8 Esbjerg Denmark, during 17 August-19 August, 2018.

Title of the presentation/talk: Switching time analysis of RF MEMS shunt capacitive Switch

7. Delivered an Oral presentation in 'First International Conference on Emerging Electrical Energy, Electronics and Computing Technologies 2019', held at Melaka, Malaysia, during 30 Oct.-31 Oct., 2019.

Title of the presentation/talk: A modified capacitance model of shunt micro switch based on MEMS technology in actuation mode: simulation and analytical study

8. Delivered an Oral presentation in '6th International Conference on Computers Management & Mathematical Sciences (ICCM 2020)', held at NERIST, Nirjuli, India, during 22 Nov.-23 Nov., 2020.

Title of the presentation/talk: Dielectric Material Selection for High Capacitance Ratio and Low Loss in MEMS Capacitive Switch using Ashby's Methodology

Editorial Board Member for Reputed Journals

1. **Associate Editor**, World Journal of Electrical and Electronic Engineering (Peer reviewed)
2. **Editorial Board Member**, International Journal of Engineering Trends and Technology (eISSN: 2231-5381) (**SCOPUS**)

Reviewer for Reputed Journals

IEEE Access (IEEE)

BioNanoScience (Springer)

Soft Computing (Springer)

Microelectronic Engineering (Elsevier)

Sensor Review (Emerald)

International Journal of Electronics Letters (Taylor & Francis)

Australian Journal of Multi-Disciplinary Engineering (Taylor & Francis)

Micromachines (MDPI)

Sensors (MDPI)

Electronics (MDPI)

Actuators (MDPI)

Many reputed Scopus Journals publisher by other publishers
