BIO-DATA

1. **Name: Arshid Nisar Laway**
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   National Institute of Technology Srinagar, J&K, India, 190006
3. **Email(s) and contact number(s):** Email: arshidnisar_dstece@nitsri.ac.in
4. **Institution:** National Institute of Technology Srinagar, J&K, India, 190006
5. **Date of Birth:** 20-January-1993
6. **Gender:** Male
7. **Category:** General
8. **Whether differently abled (Yes/No):** No

9. **Academic Qualification**

S. No	Degree	Year	Subject	University/Institution	% of marks
1.	B. E.	2015	Electronics & Communication Engineering	University of Jammu	74.5
2.	M. Tech.	2019	Embedded Systems	University of Kashmir	94.3
3.	Ph.D.	2024	Microelectronics & VLSI	IIT-Roorkee	NA
	PhD thesis title: Spin based devices for memory and computing **Supervisor:** Prof. Brajesh Kumar Kaushik and Prof. Bishnu Prasad Das **Institute:** Indian Institute of Technology Roorkee (IIT-Roorkee) **Year of award:** 2024				

10. **Work experience**

S. No.	Position held	Name of the Institute	From	To
1.	DST-Inspire Faculty	National institute of Technology Srinagar, J&K, India	Sept. 2025	Continued
2.	Postdoc Researcher	Spintec — CEA/CNRS/UGA, Grenoble, France, 38000	Jan. 2025	Aug. 2025
3.	Junior Research Fellow	IIT-Roorkee, Uttarakhand, India, 247667	May 2019	Nov. 2019

11. **Professional Recognition/ Award/ Prize/ Certificate, Fellowships**

S. No	Name of Award	Awarding Agency	Year
1.	DST-Inspire Faculty Fellowship	DST, Government of India	2025-2029
2.	National PDF Fellowship	ANRF	2025
3.	PhD Fellowship	MoE, Government of India	2019-2024
4.	Travel Grant	DORA, IIT-Roorkee, India	2023
5.	Visiting Researcher	NTU Singapore	2023
6.	UGC-NET (Electronics)	UGC, India	2018
7.	JK-SET (Electronics)	University of Kashmir, India	2018
8.	GATE (ECE)	IIT-Madras, India	2016

12. **Publications (Journals)**

S. No.	Author(s)	Title	Name of Journal	Volume	Page	Year
1	U. Bature, H. Abbas, A. Alzahrani, **Arshid Nisar**, F. Bashir, F. Zahoor	Analysis of resistive switching properties in TiO2-based RRAM device for neuromorphic computing applications	*Applied Materials Today*	47	102916	2025
2	F. Bashir, H. Abbas, **Arshid Nisar**, U. Bature, A. Alzahrani, F. Zahoor	Cryogenic electronics for high performance computing applications: A comprehensive review	*Materials Today Physics*	-	101960	2025
3	S. N. Dikshit, **Arshid Nisar**, B. Dixit, B. Kaur, A. K. Shukla, A. Kumar, J. Chen, J. P. Wang, H. Fulara, B. K. Kaushik	Optically assisted ultrafast spintronics: A review	*Physics Reports*	1140	1-46	2025
4	Furqan Zahoor, Usman Bature, **Arshid Nisar**, Ali Alzahrani, Haider Abbas, Faisal Bashir	A Comprehensive Review on Physical Unclonable Functions based on Resistive Random Access Memory.	*ACS Applied Electronic Materials*	7	6215-6242	2025
5	Kunal Das, **Arshid Nisar**, Furqan Zahoor, Brajesh K. Kaushik, and Anupam Chattopadhyay	Unified PUF and TRNG design using spin-orbit torque magnetic tunnel junction based crossbar array.	*IEEE Transactions on Magnetics*	61	1-7	2025
6	**Arshid Nisar**, Surya K. Arya, Brajesh K. Kaushik, and Tanmoy Pramanik	Write error ballooning due to anisotropy variation within the free layer in perpendicular magnetic tunnel junctions.	*Physica Scripta*	100	035006	2025
7	**Arshid Nisar**, Furqan Zahoor, Sidhaant S. Thakker, Kunal K. Das, Subhamoy Maitra, Brajesh K. Kaushik, and Anupam Chattopadhyay	SOT-MTJ based non-volatile flip-flop with in-memory randomness for application in grain stream ciphers.	*IEEE Access*	13	34677-34686	2025
8	Gaurav Verma, Sandeep Soni, **Arshid Nisar**, Seema Dhull and Brajesh K. Kaushik	Energy-efficient CNN accelerator using voltage-gated DSHE-MRAM.	*IEEE Transactions on Electron Devices*	----	1-8	2025
9	Shipra Saini, Sandeep Soni, **Arshid Nisar**, Seema Dhull, Sabpreet Bhatti, Rachid Sbiaa, S. N.	Meander geometry based skyrmionic synapse for image classification.	*Journal of Magnetism and Magnetic Materials*	----	172700	2025

	Piramanayagam, and Brajesh K. Kaushik					
10	**Arshid Nisar**, Brajesh Kumar Kaushik, and Tanmoy Pramanik	Size dependence of domain wall mediated switching dynamics of perpendicular magnetic tunnel junctions in the presence of reference layer stray field.	*AIP Advances*	14	025214	2024
11	Furqan Zahoor, **Arshid Nisar**, U. I. Bature, Haider Abbas, Faisal Bashir, Anupam Chattopadhyay, Brajesh Kumar Kaushik, A. Alzahrani, and F. A. Hussain	An overview of critical applications of resistive random access memory.	*Nanoscale Advances*	6	4980-5006	2024
12	Seema Dhull, **Arshid Nisar**, Gaurav Verma, and Brajesh Kumar Kaushik	Modeling of spin-orbit torque driven domain wall device for all-spin neural network.	*IEEE Transactions on Electron Devices*	71	4604-4612	2024
13	Furqan Zahoor, **Arshid Nisar**, Kunal Kranti Das, Subhamoy Maitra, Brajesh Kumar Kaushik, and Anupam Chattopadhyay	Novel post processing and sampling point optimization techniques for enhancing quality of randomness in MTJ-based TRNGs.	*IEEE Transactions on Electron Devices*	71	4138-4145	2024
14	Seema Dhull, Lam Wai William, **Arshid Nisar**, Durgesh Kumar, Hasibur Rahaman, Brajesh Kumar Kaushik, and S. N Piramanayagam	Energy-efficient neural network using an anisotropy field gradient-based self-resetting neuron and meander synapse.	*Applied Physics Letters*	125	012402	2024
15	Seema Dhull, Walid Al Misba, **Arshid Nisar**, Jayasimha Atulasimha, and Brajesh Kumar Kaushik	Quantized magnetic domain wall synapse for efficient deep neural networks.	*IEEE Transactions on Neural Networks and Learning Systems*	36	4996-5005	2024
16	Gaurav Verma, Sandeep Soni, **Arshid Nisar**, and Brajesh Kumar Kaushik	Multi-bit MRAM based high performance neuromorphic accelerator for image classification.	*Neuromorphic Computing and Engineering*	4	014008	2024
17	**Arshid Nisar**, Tanmoy Pramanik, and Brajesh Kumar Kaushik	Impact of reference-layer stray field on the write- error rate of perpendicular spin-transfer-torque	*Physical Review Applied*	19	024016	2023

		random-access memory. .				
18	**Arshid Nisar**, Hemkant Nehete, Gaurav Verma, and Brajesh Kumar Kaushik	Hybrid multilevel STT/DSHE memory for efficient CNN training.	*IEEE Transactions on Electron Devices*	70	1006–1013	2023
19	Gaurav Verma, **Arshid Nisar**, Seema Dhull, and Brajesh Kumar Kaushik	Neuromorphic accelerator for spiking neural network using SOT-MRAM crossbar array.	*IEEE Transactions on Electron Devices*	70	6012–6020	2023
20	Seema Dhull, **Arshid Nisar**, Vikas Nehra, Sanjay Prajapati, T. Nandha Kumar, and Brajesh Kumar Kaushik	Low energy and write-efficient spin-orbit torque based triple-level cell MRAM.	*IEEE Transactions on Magnetics*	59	1–8	2023
21	**Arshid Nisar**, Seema Dhull, Sonal Shreya, and Brajesh Kumar Kaushik	Energy-efficient advanced data encryption system using spin-based computing-in-memory architecture.	*IEEE Transactions on Electron Devices*	69	1736–1742	2022
22	Alok Kumar Shukla, **Arshid Nisar**, Seema Dhull, and Brajesh Kumar Kaushik	Novel radiation hardened magnetic full adder using spin-orbit torque for multinode upset.	*IEEE Magnetics Letters*	13	1–5	2022
23	Seema Dhull, **Arshid Nisar**, Namita Bindal, and Brajesh Kumar Kaushik	Advances in magnetic domain walls and their applications.	*IEEE Nanotechnology Magazine*	16	29–44	2022
24	Seema Dhull, **Arshid Nisar**, Rakesh Bhat, and Brajesh Kumar Kaushik	Area efficient computing-in-memory architecture using STT/SOT hybrid three level cell.	*IEEE Open Journal of Nanotechnology*	3	45–51	2022
25	Surya Narain Dikshit, **Arshid Nisar**, Seema Dhull, Namita Bindal, and Brajesh Kumar Kaushik	Hybrid spintronics/CMOS logic circuits using all-optical-enabled magnetic tunnel junction.	*IEEE Open Journal of Nanotechnology*	3	85–93	2022
26	Alok Kumar Shukla, Seema Dhull, **Arshid Nisar**, Sandeep Soni, Namita Bindal, and Brajesh Kumar Kaushik	Novel radiation hardened SOT-MRAM read circuit for multi-node upset tolerance.	*IEEE Open Journal of Nanotechnology*	3	78–84	2022
27	**Arshid Nisar**, Seema Dhull, Sparsh Mittal, and Brajesh Kumar Kaushik	SOT and STT-based 4-bit MRAM cell for high-density memory applications.	*IEEE Transactions on Electron Devices*	68	4384–4390	2021
28	**Arshid Nisar**, Seema	High-performance	*Semiconductor*	36	125013	2021

	Dhull, Brajesh Kumar Kaushik, and Sparsh Mittal	voltage controlled multilevel MRAM cell.	*Science and Technology*			
29	Seema Dhull, **Arshid Nisar**, and Brajesh Kumar Kaushik	SOT and STT based four-bit parallel MRAM cell for high-density applications	*IEEE Transactions on Nanotechnology*	20	653–661	2021
30	Namita Bindal, **Arshid Nisar**, Seema Dhull, and Brajesh Kumar Kaushik	Magnetic skyrmions: Recent advances and applications.	*IEEE Nanotechnology Magazine*	15	28–40	2021
31	Gaurav Verma, Namita Bindal, **Arshid Nisar**, Seema Dhull, and Brajesh Kumar Kaushik	Advances in neuromorphic spin-based spiking neural networks: a review.	*IEEE Nanotechnology Magazine*	15	33–44	2021
32	**Arshid Nisar**, Farooq A Khanday, and Brajesh Kumar Kaushik	Implementation of an efficient magnetic tunnel junction-based stochastic neural network with application to iris data classification.	*Nanotechnology*	31	504001	2020

13. Publications (Conferences)

S. No.	Author(s)	Title	Conference	Place	Page	Year
1	**Arshid Nisar,** Lorena Anghel, Gregory Di Pendina	ATPG-Compliant Digital Modeling of MRAM for Cell-Aware Testing	*2026 IEEE 17th Latin America Symposium on Circuits and System (LASCAS)*	Arequipa, Peru	1-5	2026
2	**Arshid Nisar,** Lorena Anghel, Gregory Di Pendina	Fault Modeling and Testing of Spin-Orbit Torque-Based Multipillar Memory Cell	*2025 IFIP/IEEE 33rd International Conference on Very Large Scale Integration (VLSI-SoC)*	Puerto Varas, Chile	1-5	2025
3	K. K. Das, S. Soni, **Arshid Nisar**, and S. Shreya	A Spintronic True Random Number Generator Using Vortex Nano-Oscillators and Probabilistic SOT-MTJ Programming	*IEEE International Magnetics Conference (INTERMAG)*	Manchester	--	2026
4	**Arshid Nisar**, Brajesh Kumar Kaushik, and Tanmoy Pramanik	Size dependence of domain wall mediated switching dynamics of perpendicular magnetic tunnel junctions in the presence of reference	*68th Annual Conference on Magnetism and Magnetic Materials*	Dallas, USA	--	2023

		layer stray field.				
5	Surya Narain Dikshit, Shipra Saini, **Arshid Nisar**, and Brajesh Kumar Kaushik	All-optical switching in Ho-Fe- Co nanostructures.	*Quantum Sensing and Nano Electronics and Photonics XIX, SPIE*	California, USA	284–288	2023
6	Seema Dhull, Sandeep Soni, **Arshid Nisar**, and Brajesh Kumar Kaushik	Energy-efficient differential spin hall effect ternary content addressable memory.	*2023 IEEE 23rd International Conference on Nanotechnology (NANO)*	Jeju Island, Korea	545–549	2023
7	**Arshid Nisar**, Seema Dhull, Brajesh Kumar Kaushik, and Farooq Ahmad Khanday	Design of an efficient VCMA controlled spintronic random number generator.	*Spintronics XIII, SPIE*	San Diego, USA	171–176	2020
8	Seema Dhull, **Arshid Nisar**, and Brajesh Kumar Kaushik	High frequency current induced domain wall motion based nano oscillator.	*Spintronics XIII, SPIE*	San Diego, USA	177–183	2020
9	**Arshid Nisar** and Farooq A. Khanday	Design and performance evaluation of magnetic tunnel junction based logic circuits.	*3rd IEEE ICCES Conference*	Coimbatore, India	361-365	2018

14. Detail of patents.

S. No	Patent Title	Name of Applicant(s)	Patent No.	Award Date	Country	Status
1	*A method for achieving threshold adaptation in LIF neuron using a magnetic domain wall device*	**A. Nisar** and B. K. Kaushik	590595	28th May, 2026	India	Granted

15. Books/Reports/Chapters/General articles.

S. No	Title	Author's Name	Publisher	Year
1	Hardware Security using Emerging Non-volatile Memories," in *Hardware Security using Emerging Non-Volatile Memory and Selector Devices: Technology and Applications*	K. K. Das, **A. Nisar**, R. Gokulnath, F. Zahoor, B. K. Kaushik, A. Chattopadhyay	Wiley-VCH, Germany	2026
2	Recent Advances in Spintronics-based Neurons for Neuromorphic Computing: Device Principles and Applications," in *Machine Learning in Nanoelectronics: Devices, Circuits and Systems*	S. Soni, G. Verma, **A. Nisar**, S. Saini, R. S. Verma, A. K. Shukla, S. Yadav, B. K. Kaushik	CRC Taylor & Francis, UK	In Press
3	Recent Trends in Deep Neural Networks and their Hardware Implementation for Biomedical Applications," in *Machine*	A. Monga, H. Nehete, S. Dhull, **A. Nisar**, S. Yadav,	CRC Taylor & Francis, UK	2026

	Learning in Nanoelectronics: Devices, Circuits and Systems	B. K. Kaushik		

16. Teaching Activities

1. Electronic Devices and Circuits — B. Tech, 3rd Semester, Autumn-2025 at NIT Srinagar
2. Introduction to Computer Networks –- B. Tech, 6th Sem, Spring-2025 at NIT Srinagar
3. Memory Design and Technologies – M. Tech, 3rd Sem, Autumn-2026 at NIT Srinagar

17. M. Tech Thesis Supervision/Assistance

1. Sukhpreet Kaur, "Emerging devices for neuromorphic computing", 2026, at NIT Srinagar
2. Syed Aleeza, "Ultra-fast two-dimensional material based memristor for neuromorphic computing" 2025, at NIT Srinagar
3. Rakesh Bhat, "Compute-in-memory using STT/SOT hybrid triple-level cell" 2022, at IIT-Roorkee
4. Lokesh, "Compute-in-memory based on voltage-controlled spin-orbit-torque memory" 2022, at IIT Roorkee

18. B. Tech Project Supervision

1. Akash, Divyanshu, Neha, "FPGA implementation of CNN" 2025, at NIT Srinagar.

19. Miscellaneous

1. **Memberships:** Student Member, IEEE | Student Member, SPIE | Member, CAS Society, IEEE | Member, Comm. Society, IEEE | Member, EDS Society, IEEE.
2. **Reviewer:** IEEE Transactions on Electron Devices | Memories: Materials, Devices, Circuits, and Systems | IET Circuits, Devices and Systems | PLOS One | Machine Learning: Science & Technology | Circuits, Systems, and Computers | Journal of Superconductivity and Novel Magnetism | Journal of Physics D: Applied Physics
3. **Member of Organizing Committee:** Member, **Board of Directors**, *NanoAI Pvt. Limited* | **TCP Member**, IEEE VLSID-2024,2025 | **Member, Organizing Committee**, GIAN Course on *Energy Efficient Hardware Security Using Post-CMOS Nanodevices for Mobile Computing* at IIT Roorkee, India **| Member, Organizing Committee**, GIAN Course on *Neuromorphic Computing with Nanoscale Spintronic Devices* at IIT Roorkee, India **| Member, Organizing Committee**, *National Seminar on Electronic Devices, Systems and Information Security (SEEDS)* at University of Kashmir | **Student Coordinator**, Workshop on *6th Sense Technology for AI/Networking* at University of Jammu