Dr Priyanka Verma

CONTACT INFORMATION
- Programme Director & Assistant Professor,
School of Computer Science,
University of Galway, Ireland

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AREAS OF INTEREST

Cyber Security, Artificial Intelligence, Industrial IoT, Digital Healthcare, Edge Computing

EDUCATION

Massachusetts Institute of Technology (MIT), USA Jul 2022
Professional Education, Leadership & Innovation

ABV-Indian Institute of Information Technology & Management (ABV-IIITM), Gwalior, India May 2021
Doctor of Philosophy, Cyber Security

Rajiv Gandhi Proudyogiki Vishwavidyalaya (RGPV), Bhopal, India Dec 2014
Master of Engineering, Computer Science & Engineering, Honours

Rajiv Gandhi Proudyogiki Vishwavidyalaya (RGPV), Bhopal, India Jun 2010
Bachelor of Engineering, Computer Science & Engineering, First Class

EXPERIENCE

Programme Director & Assistant Professor, School of Computer Science, College of Science and Engineering, University of Galway, Ireland
(Jan 2025 - Present)

Principal Investigator (PI), Data2Sustain European Digital Innovation Hub (EDIH), Ireland
(Feb 2025 - Present)

Expert, Cybersecurity and Data Protection, National Standards Authority of Ireland, Ireland
(March 2024 - Present)

Research Fellow, Department of Electronic and Computer Engineering, University of Limerick, Ireland
(Feb 2024 - Dec 2024)

Adjunct Lecturer, College of Science and Engineering, University of Galway, Ireland
(May 2022 - Dec 2024)

Marie Skłodowska-Curie Research Fellow, Data Science Institute, University of Galway, Ireland
(Feb 2022 - Jan 2024)

Scientific Researcher, VMware, Cork, Ireland

(Oct 2022- Jan 2023 and Jul 2023- Oct 2023)

Assistant Professor at Maulana Azad National Institute of Technology (An Institute of National Importance), Bhopal, India

(Aug 2020 - Jan 2022)

Teaching Assistant at ABV-IIITM (An Institute of National Importance), Gwalior, India

(Jan 2018 - Dec 2019)

Assistant Professor at SIRT, Bhopal, India

(Aug 2014 - July 2015)

Lecturer at UIT-RGPV, Bhopal, India

(Aug 2011 - April 2012)

Trainer at Zensoft Technologies Pvt. Ltd., Bhopal, India

(July 2010 - Aug 2011)

RESEARCH EXPERIENCE

Research Fellow at Department of Electronic and Computer Engineering, University of Limerick, Ireland

(Feb 2024 - Dec 2024)

- Cyber-Resilience Examination: Conducted an extensive study on cyber-resilience, addressing its relationship with CYBERSECURITY. We developed a unified definition, refined theoretical frameworks, and operational paradigms. Key actors, characteristics, goals, and objectives of cyber-resilience were explored and differentiated from related concepts. These findings have informed the development of adaptive features in our Cyber-Shock product.
- Cyber-Resilience from Theory to Practice: Our team conducted over 130 interviews with experts to bridge the gap between theory and practice in achieving cyber resilience. Tools for operationalising cyber resilience were examined, highlighting issues and challenges. Expert insights provided a thorough understanding of practices organisations use to assess, attain, and enhance their CYBERSECURITY RISK MANAGEMENT strategies and cyber resilience capability, while identifying key challenges. Moreover focusing in advanced practices involves incident response plans combined with security assessments such as PENETRATION TESTING, tabletop exercises, and red team exercises. These findings will aiding in developing the adaptive cyber resilience feature of Cyber-Shock.
- AI for Adaptive Cyber-Resilience: Reviewed the potential role of AI for CYBERSECURITY ANALYTICS, DECISION MODELLING, in enhancing cyber resilience, finding that AI can analyse large datasets to detect patterns indicative of potential threats and predict risks through trend analysis, aiding in early threat detection. AI can also automate response mechanisms, enabling rapid attack mitigation by containing threats, isolating systems, and patching vulnerabilities in real-time. This proactive approach minimizes cyber incident impacts and reduces response times. Our findings will inform the development of an AI-powered threat prediction framework/tool and adaptive learning system for incident response in the next stage of our Cyber-Shock project.

Marie Sklodowska-Curie Research Fellow with CONFIRM Centre for Smart Manufacturing at Data Science Institute, University of Galway, Ireland

(Feb 2022 - Jan 2024)

- Review and analysing the vulnerabilities present in IIoT, and identifying the most damaging attacks affecting such systems.
- Responsible to generate advanced AL/ML based framework to detect and mitigate attacks in smart manufacturing systems, while developing innovative security solutions to protect these systems from cyber threats.
- Handling imbalanced data generated in IIoT systems that is used in the threat intelligence framework for cyber attack detection.
- Other duties include conducting independent and collaborative research, publishing and presenting findings in academic forums, and writing grant proposals to secure funding. Also supervise and mentor junior researchers, support educational initiatives, and engage with the public through outreach activities (EPE) to promote awareness of their field.

PhD Dissertation - "A Study on the Effects of DDoS Attack on Cloud Environment and Reduction of Collateral Damages to Non-Targets" at ABV-IIITM, Gwalior, India

(Jul 2015 - May 2021)

- Work addresses the limitation of existing DDoS defense techniques and contributes to the methods for reducing collateral damages caused by the attack in the cloud environment.
- The work contributes an adaptive hybrid approach for attribute selection and detection of DDoS attack is adopted, which helps in accurately classifying the attack and benign requests and helps to deal with the varying network traffic conditions .
- Another contribution based on bio-inspired TLBO clustering is used to detect the DDoS attack in the cloud network with improved detection rate and low false alarms.
- A service governance and isolation based approach is used to mitigate internal collateral damages in the cloud caused by the DDoS attack.
- To provide the solution for VM level collateral damages, a request aware approach using the CS-IDR model is applied before balancing the load between the VMs during the overload situation caused by DDoS attack.
- During DDoS attack number of migration increases, which also contributes to host-level collateral damages. Therefore, an attack VM detection and recovery (AVDR) based migration policy to overcome increased migrations and host level collateral damages is presented.

UK India Educational Research Initiative (UKIERI) project UGC2013-14/037 at Anglia Ruskin University, Chelmsford, UK

(May 2016 - June 2016)

- Worked on project titled "Interfacing Adhoc Mobile Networks with IP Mobile Systems". The project mainly focuses on developing a framework or an interface to combine and regulate the network traffic from ad-hoc network to IP mobile network and vice-versa. The work assures QoS provided by the interface through the Admission Control (AC) mechanism. Therefore a decentralized admission control model is used, which

also reduces the risk of a single point of failure. It also reduces the load of AC by incorporating security mechanisms on the top of the interface model.

MEng Dissertation - "WIDPS: Wormhole Attack Intrusion Detection and Prevention Security Scheme in MANET" at RGPV, Bhopal, India

(Sep 2012 - Dec 2014)

- Wormhole attack intrusion detection, as well as prevention scheme, is used to secure the network from wormhole attack.
- With the help of proposed scheme nodes with abnormal behavior has been identified.
- After detection, the prevention module broadcast the particular identification (ID) of the attacker so that no node in network replies to that request and secure the MANET.
- WIDPS provides reliable and secure communication in the network by preventing wormhole attacks and measuring network performance based on network parameters like packet delivery ratio (PDR), normal routing load, and throughput, end to end delay between source and destination.

PUBLICATIONS

- **Priyanka Verma**, Donna O'Shea, Thomas Newe, Ankit Vidyarthi, Deepak Gupta, Jabir Ali, Hamad Aldawsari, John G. Breslin, "WebShield 5.0: Harnessing AI and NLP to Combat Web Threats in Industry 5.0" Alexandria Engineering Journal, Elsevier, 2025. https://doi.org/10.1016/j.aej.2025.05.018
- Nitesh Bharot, Nakul Mehta, John G Breslin, **Priyanka Verma** "CloudLock: Secure Data Sharing using a Hybrid Cryptosystem in Multi-cloud Data Storage" Cluster Computing, Springer, 2025 **[Accepted]**
- Sangeeta Sharma, **Priyanka Verma**, Nitesh Bharot, Ashish Kumar, Navdeep Singh Rathore, Shivanshu Sharma "A Combined Supervised and Unsupervised Deep Learning Approach for Intrusion Detection in IoT Traffic in an Edge Computing Environment" SN Computer Science, Springer, 2025. https://doi.org/10.1007/s42979-025-04103-0
- Junaid Akram, Awais Akram, Vandana Sharma, Ali Anaissi, Rutvij H Jhaveri, **Priyanka Verma** "Blockchain-Based Model for Secure and Fair Data Provision in Crowdsourced Drone Services" IEEE Open Journal of the Communications Society, IEEE, 2025. https://doi.org/10.1109/OJCOMS.2025.3
- Nakul Mehta, Nitesh Bharot, John G Breslin, **Priyanka Verma** "PPFL-DCS: Privacy-Preserving Federated Learning using Neural Transformer and Leveraging Dynamic Client Selection to Accommodate Data Diversity" IEEE Access, IEEE, 2025. https://doi.org/10.1109/ACCESS.2025.3572605
- **Priyanka Verma**, Donna O'Shea, Thomas Newe, Nakul Mehta, Nitesh Bharot, John G. Breslin, "ABIDS-VEM: leveraging an equilibrium optimizer and data ramification in association with ensemble learning for anomaly-based intrusion detection system", The Journal of Supercomputing, Springer 2025. https://doi.org/10.1007/s11227-025-07292-w
- **Priyanka Verma**, Thomas Newe, George D O'Mahony, Dean Brennan, Donna O'Shea "Towards a Unified Understanding of Cyber Resilience: A Comprehensive Review of Concepts, Strategies, and Future Directions", IEEE Access, 2025. https://doi.org/10.1109/ACCESS.2025.3551887

- **Priyanka Verma**, Nitesh Bharot, John G. Breslin, Donna O'Shea, Anand Mishra, Ankit Vidyarthi, Deepak Gupta "Leveraging Transfer Learning Domain Adaptation Model with Federated Learning to Revolutionize Healthcare", Expert systems, Wiley 2025. https://doi.org/10.1111/exsy.13827
- **Priyanka Verma**, R.K. Pateriya, Savita Baghel, Nakul Mehta, Nisha Chaurasia, Nitesh Bharot, "Securing Cloud Networks: A Hybrid Intrusion Detection Approach Using Fuzzy C-Means Clustering and Decision Tree Classification", International Conference on Computing and Information Technology (ICCIT) 2025.
- Nitesh Bharot, John G. Breslin, **Priyanka Verma**, "Revolutionizing Human Activity Recognition in Healthcare: Harnessing Red Deer for Feature Selection and Focal Loss-Based MLP for Classification", SoftCOM 2024. https:// doi.org/10.23919/SoftCOM62040.2024.10721868
- Nikhil Rathoure, R. K. Pateriya, Nitesh Bharot & **Priyanka Verma**, "Combating deepfakes: a comprehensive multilayer deepfake video detection framework", Multimedia Tools and Applications, Springer 2024, https://doi.org/10. 1007/s11042-024-20012-5.
- Sangeeta Sharma, **Priyanka Verma**, Nitesh Bharot, Amish Ranpariya, Rakesh Porika, "PULSE: Proactive uncovering of latent severe anomalous events in IIoT using LSTM-RF model", Cluster computing, Springer 2024, https://doi.org/ 10.1007/s10586-024-04653-7.
- Nisha Chaurasia, Munna Ram, **Priyanka Verma**, Nakul Mehta, Nitesh Bharot, "A federated learning approach to network intrusion detection using residual networks in industrial IoT networks", The Journal of Supercomputing, Springer 2024, https://doi.org/10.1007/s11227-024-06153-2.
- **Priyanka Verma**, Nitesh Bharot, John G. Breslin, "Uncovering Collateral Damages and Advanced Défense Strategies in Cloud Environments against DDoS Attacks: A Comprehensive Review", Transactions on Emerging Telecommunications Technologies, Wiley 2024, https://doi.org/10.1002/ett.4934.
- Nitesh Bharot, **Priyanka Verma**, Mirco Soderi, and John G. Breslin. "DQ-DeepLearn: Data Quality Driven Deep Learning Approach for Enhanced Predictive Maintenance in Smart Manufacturing" Procedia Computer Science 232 (2024): 574-583.
- **Priyanka Verma**, Nitesh Bharot, John G. Breslin, Donna O'Shea, Ankit Vidyarthi, Deepak Gupta, "Zero-Day Guardian: A Dual Model enabled Federated Learning Framework for Handling Zero-day Attacks in 5G Enabled IIoT", IEEE Transactions on Consumer Electronics, 2023, DOI: 10.1109/TCE.2023.3335385.
- **Priyanka Verma**, John G. Breslin, Donna O'Shea, Nakul Mehta, Nitesh Bharot, and Ankit Vidyarthi, "Leveraging Gametic Heredity in Oversampling Techniques to Handle Class Imbalance for Efficient Cyberthreat Detection in IIoT", IEEE Transactions on Consumer Electronics, 2023, DOI: 10.1109/TCE.2023.3319439.
- **Priyanka Verma**, A. Rama Krishna Kowsik, R.K. Pateriya, Nitesh Bharot, Ankit Vidyarthi and Deepak Gupta, "A Stacked Ensemble Approach to Generalize the Classifier Prediction for the Detection of DDoS Attack in Cloud Network", Mobile Networks and Applications, Springer, pp. 1-15, 2023.

- Jefkine Kafunah, **Priyanka Verma**, Muhammad Intizar Ali, John G. Breslin, "Out-of-Distribution Data Generation for Fault Detection and Diagnosis in Industrial Systems", IEEE Access, 2023 10.1109/ACCESS.2023.3337658.
- **Priyanka Verma**, John G. Breslin, and Donna O'Shea. "PerCFed: An Effective Personalized Clustered Federated Learning Mechanism to Handle non-IID Challenges for Industry 4.0 ", IEEE 12th International Conference on Cloud Networking (CloudNet), Hoboken, NJ, USA, 2023, pp. 299-306, doi: 10.1109/CloudNet59005.2023.10490034.
- **Priyanka Verma**, Miguel Ponce de Leon, John G. Breslin, and Donna O'Shea. "FedTIU: Securing Virtualized PLCs Against DDoS Attacks Using a Federated Learning Enabled Threat ", In 2023 IEEE International Conference on Smart Computing (SMARTCOMP), pp. 233-236. IEEE, 2023. DOI: 10.1109/SMARTCOMP58114.2023.00058
- Nitesh Bharot, Nisha Ghangare, and **Priyanka Verma**. "Optimizing Transfer Efficiency in Multi-Cloud Storage Systems with Edge and Fog Computing." In 2023 IEEE 2nd Industrial Electronics Society Annual On-Line Conference (ONCON), pp. 1-6. IEEE, 2023
- Nitesh Bharot, Mirco Soderi, **Priyanka Verma**, and John G. Breslin. "Improving Product Quality Control in Smart Manufacturing through Transfer Learning-Based Fault Detection" In 2023 IEEE International Conference on Smart Computing (SMARTCOMP), pp. 213-215. IEEE, 2023, DOI: 10.1109/SMARTCOMP58114.2023.00051
- **Priyanka Verma**, Nitesh Bharot, "A Review on Security Trends and Solutions Against Cyber Threats in Industry 4.0." In 2023 Third International Conference on Secure Cyber Computing and Communication (ICSCCC), pp. 397-402. IEEE, 2023.
- **Priyanka Verma**, John G. Breslin, Donna O'Shea, "FLDID: Federated Learning Enabled Deep Intrusion Detection in Smart Manufacturing Industries", Sensors, MDPI, vol. no. 22, 2022.
- Rajesh Kumar Pateriya, **Priyanka Verma**, and Dharam Singh. "MADSE: Adaptive Threshold-based Stack Ensemble Approach for the Detection of DDOS Attack in Cloud" Suranaree Journal of Science & Technology 29(5) (2022).
- Omkar Shende, R. K. Pateriya, **Priyanka Verma**, "A N-binary classification and grouping based approach to improve the performance of anomaly detection", Arabian Journal of Science and Engineering, Springer, vol. 47, pp. 1275-1287, 2022.
- Rajeev Kumar Gupta, Pranav Gautam, Rajesh Kumar Pateriya, **Priyanka Verma**, Yatendra Sahu, "COVID-19 Lesion Segmentation and Classification of Lung CTs Using GMM-Based Hidden Markov Random Field and ResNet 18", International Journal of Fuzzy System Applications vol. 11, no. 2, 2022.
- R.K. Pareriya, **Priyanka Verma**, Pathan Suhana, "An Ensemble XGBoost Approach for the Detection of Cyberattacks in the Industrial IOT Domain, Big data analytics in Fog-enabled IoT Networks: towards a privacy and Security perspective approach, CRC Press, Taylor & Francis, 2022.
- **Priyanka Verma**, John G. Breslin, Donna O'Shea, and R. K. Pateriya. "A Stacked Ensemble Method with Adaptive Attribute Selection to Detect DDoS Attack in Cloud-Assisted WBAN." In Proceedings of 4^{th} Inter-

national Conference, MIND 2022, January 19–20, 2022, Proceedings, Part II, pp. 329-344. Cham: Springer Nature Switzerland.

- **Priyanka Verma**, Shashikala Tapaswi, W. Wilfred Godfrey, "A service governance and isolation based approach to mitigate internal collateral damages in cloud caused by DDoS attack", Wireless Networks, Springer, vol. 27, pp. 2529–2548, 2021.
- **Priyanka Verma**, Shashikala Tapaswi, W. Wilfred Godfrey, "A request aware module using CS-IDR to reduce VM level collateral damages caused by DDoS attack in cloud environment" Cluster Computing, Springer, vol. 24, no. 3, pp. 1917–1933, 2021.
- **Priyanka Verma**, Shashikala Tapaswi, W. Wilfred Godfrey, "An impact Analysis and Detection of HTTP Flooding Attack in Cloud using Bio-inspired Clustering Approach" International Journal of Swarm Intelligence Research, IGI-Global, vol. 12, no. 1, pp. 29-49, 2021.
- A. Rama Krishna Kowsik, R. K. Pateriya, **Priyanka Verma**, "A deep learning based hybrid approach for DDoS detection in cloud computing environment", In 2021 IEEE 4th International Conference on Computing, Power and Communication Technologies (GUCON) (pp. 1-6). IEEE
- **Priyanka Verma**, Shashikala Tapaswi, W. Wilfred Godfrey, "AVDR: A Framework for Migration Policy to Handle DDoS Attacked VM in Cloud" Wireless Personal Communication, Springer, vol. 115 , no. 2, pp. 1335-1361, 2020.
- **Priyanka Verma**, Shashikala Tapaswi, W. Wilfred Godfrey, "An Adaptive Threshold Based Attribute Selection to Classify Requests Under DDoS Attack in Cloud-Based Systems" Arabian Journal of Science and Engineering, Springer, vol. 45, no. 4, pp. 2813-2834, 2020.
- Nitesh Bharot, **Priyanka Verma**, Sangeeta Sharma, Veenadhari Suraparaju, "Distributed Denial-of-Service Attack Detection and Mitigation Using Feature Selection and Intensive Care Request Processing Unit" Arabian Journal for Science and Engineering, Springer, vol. 43, pp. 959–967, 2018
- **Priyanka Verma**, Shashikala Tapaswi, W. Wilfred Godfrey, "Agent-Based Wormhole Attack Detection and Prevention Algorithm in the Cloud Network Using MapReduce Technique", In Progress in Advanced Computing and Intelligent Engineering, pp. 439-446. Springer, Singapore, 2018.
- Nitesh Bharot, Veenadhari Suraparaju, Sanjeev Gupta, **Priyanka Verma**, "Mitigating distributed denial of service attack in cloud computing environment using threshold based technique", Indian Journal of Science and Technology, vol. 9, no. 38, pp. 1-7, 2016.
- **Priyanka Verma**, Sumit Dhariwal, Harshvardhan Tiwari, "WIDPS: Wormhole Attack Intrusion Detection and Prevention Security Scheme in MANET", International Journal of Computer Application, vol. 10, no. 105, pp.1-6, 2014.

KEY ACHIEVEMENTS IN RESEARCH EXCELLENCE & IMPACT

A. Key Achievements in the Generation of Knowledge

- In a pioneering exploration within the realm of cybersecurity, my research during the PhD stands out as a seminal contribution to the understanding and mitigation of collateral damages caused by Distributed Denial of Service (DDoS) attacks in cloud computing environments. Prior

to our investigation, the nuanced topic of collateral damages resulting from DDoS attacks—and effective strategies for their mitigation—remained largely unexplored within academic literature. This gap in knowledge signified a critical vulnerability in cloud computing security, underscoring the urgent need for dedicated research to address this complex issue. An evolution of the PhD work has also

strategically focused on leveraging containerization technology to mitigate the defined collateral damages caused by DDoS attacks. -As a result of the published findings I was an INVITED KEYNOTE SPEAKER at Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, India 2022 and ShriRam College of Engineering and Management, Gwalior, India, 2023.

- In a groundbreaking collaboration with the Office of the CTO (chief technology officer) – Distributed Edge at VMware, Cork, my project has marked a significant leap forward in the domain of industrial cybersecurity. This research has significantly advanced the field of industrial cybersecurity through the development and implementation of FedTIU. This initiative has addressed the pressing cybersecurity vulnerabilities faced by virtualized Programmable Logic Controllers (vPLCs) in industrial settings, employing federated learning techniques to enable collaborative, real-time detection and mitigation of Distributed Denial of Service (DDoS) attacks. By ensuring the availability and reliability of vPLCs, FedTIU not only tackles a critical security issue but also pioneers a novel framework for collaborative threat intelligence, marking a major leap forward in the generation of knowledge and setting new standards in industrial cybersecurity practices. This achievement highlights the importance of innovative, interdisciplinary approaches and industry-academia collaborations in addressing complex cybersecurity challenges, thereby enhancing the security and resilience of critical infrastructure in the digital age. In this collaboration, I am solely responsible for the development and implementation of proposed approach, while incorporating VMware suggestions.
- The work during my Marie Sklodowska-Curie Fellowship (SMART 4.0) marks a significant milestone in advancing the frontiers of knowledge within the context of Industry 4.0 by introducing a groundbreaking Federated Learning enabled Deep Intrusion Detection framework. This work addresses a paramount challenge in cybersecurity, offering a novel solution that enhances the security posture of smart manufacturing industries. By facilitating a collaborative ecosystem where multiple entities can jointly detect and counteract cyber threats without the need to exchange sensitive data, this framework sets a new paradigm in how industries can safeguard against sophisticated cyber- attacks while maintaining data privacy. -Work is appreciated by many organizations and Industries and I was an INVITED KEYNOTE SPEAKER AT Qubit “Top Cybersecurity Event in Central Eastern, and South Eastern Europe regions”. - During this research I have published 5 research articles around this topic.

B. Key Achievements in the Development of Individuals & Collaborations

- As a mentor and co-supervisor, I played a pivotal role in guiding a PhD student towards the successful submission of a proposal funded by the China Scholarship Council. The proposal, centered on ”Optimizing network communication and energy consumption for Federated Learning-

based solutions in IIoT," benefited from my support in conceptualizing the federated learning perspective, as well as in structuring and reviewing the overall proposal.

- Throughout 2022 and 2023, I had the opportunity to supervise a number of undergraduate interns, both on-site and remotely. A particularly noteworthy work with one of the interns has laid the groundwork for a forthcoming paper titled "PPFL-DCS: Privacy-Preserving Federated Learning using a Neural Transformer and Leveraging Dynamic Client Selection to Accommodate Data Diversity." This work represents an exceptional outcome of an undergraduate internship, achieved under my supervision. My mentorship extended beyond project guidance, encompassing advice on research directions and career pathways. Influenced by this support and the insights gained during his internship, he decided to pursue a career in research. Thus for applying prestigious Hardiman scholarship, I supported him for proposal writing and reviewing his application, facilitating his journey towards a PhD at the University of Galway.
- Active team member from University of Galway for successfully submitted project "SPARK" for the call HORIZON-MISS-2023-SOIL-01-08. It is a consortium project with 20 partners that seeks to establish a network of living labs across Europe to accelerate the transition to regenerative agriculture, improve soil health using AI, and move the EU towards a climate-neutral and green future. Drafted the work package related to "Intelligent Decision Support System" under the guidance of Prof. John Breslin (Personal professor, University of Galway).
- I played a pivotal role in reviewing and bolstering Nitesh Bharot's successful GÉANT proposal at the Data Science Institute, University of Galway, where we work in the same unit. Drawing upon my expertise and extensive experience, I provided crucial support for his application by offering insightful feedback and suggestions for enhancement. My involvement was instrumental in refining the proposal's quality and aligning it with the high standards of the GEANT program.

C. Key Achievements Supporting Broader Society & the Economy

- I had the esteemed privilege of delivering a talk to VMware employees with the primary aim of encouraging research and development activities within the organization. This opportunity allowed me to share insights from my own experience and to inspire a culture of innovation and continuous learning among the team. Furthermore, I stressed the significance of a collaborative R&D environment, where ideas are freely exchanged, and interdisciplinary teams worked together to push the boundaries of what's possible. I encouraged the employees to actively engage in R&D activities, seek cross-departmental collaborations, and keep abreast of the latest technological trends and research findings.
- As a participant in the N2 Women Panel at SMARTCOMP 2023 held in Nashville, USA, I contributed to advancing the discourse on "Inclusive Excellence" within academia. By engaging in discussions with female leaders, I explored practical strategies and actions to translate values of equity, diversity, and belonging into meaningful practices. Our panel aimed to narrow the gap between rhetoric and action by empowering researchers with actionable insights to promote diversity and develop a sense of belonging within academic communities. Through this participation, I facilitated the exchange of ideas and knowledge, ultimately

contributing to broader societal goals of inclusivity, equity, and excellence in research and education.
https://smartcomp.isis.vanderbilt.edu/schedule.htmlpanels

D. Key Achievements Supporting the Research Community

- As part of my commitment to promoting diversity and inclusion in STEM fields, particularly to encourage women's participation, under the shelter of Cyberskills, I was asked for a video shoot. This was aimed to highlight my inspiring story and achievements in STEM, showcasing my journey, challenges, and successes. The objective was to create a motivational video that could serve as a beacon of encouragement for young women and girls considering careers in science, technology, engineering, and mathematics. https://www.youtube.com/watch?v=8n2hnoQ745M
- As a researcher, I have uniquely leveraged my experience of motherhood as a powerful motivator and a source of inspiration in my work, especially in encouraging women in STEM fields. In an article published in Silicon Republic, I shared this personal journey, aiming to resonate with and inspire other women balancing careers and motherhood. My narrative focused on breaking the stereotype that motherhood is a hindrance to professional growth. Instead, I portrayed it as a strength, empowering women to pursue their ambitions in STEM. By sharing my story, I hoped to encourage more women to enter and thrive in STEM careers, creating a more diverse and inclusive environment in these fields.
https://www.siliconrepublic.com/people/motherhood-women-in-stem-researcher
- As the Founding member of ABV-IIITM IEEE Student Branch and serving as Program Committee Head from January 2019 to August 2020, my involvement significantly supported the wider research community through various initiatives. By organizing conferences, workshops, seminars, science project competitions, open house exhibitions, and technical poster presentations under the ABV-IEEE student branch chapter, The initiatives provided platforms for researchers to showcase their work, exchange ideas, and collaborate with peers.
https://www.iiitm.ac.in/index.php/en/

GRANTS, FELLOWSHIPS, & SCHOLARSHIPS

- Recipient of Marie Sklodowska-Curie Postdoctoral Research Fellowship SMART 4.0 [2021]: Received the funding of €194,329.00 from SFI and EU for the SECURE-ACT project.
- FTYS Fellowship [2021]: Awardee of "Fellowship for training of young scientists (FTYS)" offered by 36^{th} Madhya Pradesh Young Scientist Congress.
- Recipient of PhD Scholarship from Ministry of HRD, Government of India in 2015.
- Recipient of Postgraduate Scholarship from Ministry of HRD, Government of India in 2012.

PATENT

Indian Patent- 201721003190
Cobweb Cleaning Broom with non-electric rotating head for effective cleaning, Sangeeta Sharma, **Priyanka Verma**, Nitesh Bharot **(Granted)**.

SUPERVISION

- Doctoral- 03
- Postgraduate level- 15
- Graduate level- 24
- Internship- 05

TALKS AND PRESENTATIONS

- Judge at AtlanTec AI Challenge 2025.
- Session Chair at Cloudnet 2023 held at Stevens Institute New York, USA
- Speaker at Qubit Conference 2023, Prague, Czech Republic on Cybersecurity and its Solutions for Industry 4.0
- Panelist on the N2Women (Networking Networking Women) Panel at the IEEE SMARTCOMP 2023 Conference, Nashville, USA on N2Women.
- Lecture on Importance of Cloud Security, Use Cases, and Career Guidance at annual KPMG Summer School 2023 at University of Galway.
- Talk on Cyber Threat Detection in Smart Manufacturing using Federated Learning, at Insight Conference on Deep Learning 2022.
- Lecture on Importance of Cyber Security, Use Cases, and Career Guidance at annual KPMG Summer School 2022 at University of Galway.
- Presented in International Conference on Advance Computing and Intelligent Engineering (ICACIE-2016), Bhubaneswar, India.

ACADEMIC ACHIEVEMENTS, & AWARDS

- **itag Excellence Award 2025:** Shortlisted as a finalist for the Excellence in Organisational Leadership category, Ireland
- **Young Researcher Recognition:** Received recognition from the PhD Chamber of Commerce and Industry (PHDCCI). This accolade is granted to young researchers from MP, India for their exceptional contributions to innovation and technology.
- **STEM Award Finalist:** Shortlisted as a finalist (Top 5) for the Women in STEM Awards 2023, Ireland
- **Research Representative:** Hold the post of research representative on the Internationalisation Committee, University of Galway from Sep 2023 to Jan 2024.
- **Letter of Appreciation 2022:** Received a letter from the President's office University of Galway, appreciating the article on my MSCA Fellowship journey and challenges around work-life balance during my pregnancy.
- **Program Committee Head:** Held the post of Programme Committee Head from June 2019 to August 2020 for ABV-IEEE student branch chapter.
- **Certificate of Appreciation in 2017:** Recognised by Technical Education Minister Madhya Pradesh for the remarkable work in field of Technical Education.
- **Academic Visitor 2016:** Anglia Ruskin University, Chelmsford, UK.
- **GATE 2015:** Ranked in top 6% in India (among 115425 students).
- **SRIJAN Award:** Received State's SRIJAN award in 2015 for receiving the best university result for the subject of "Data Communication",
- **NET 2014:** Qualified University Grant Commission (UGC) NET in Computer Science and Applications discipline in Dec 2014.
- **GATE 2011:** Ranked in top 5% in India (among 136027 students).

- **Achiever of the Quarter:** Received achiever of the Quarter Q3, FY (2010-2011) at Zensoft Technologies Pvt. Ltd., Bhopal.
- **Achiever of the Month:** Received achiever of the month award at SIRT, Bhopal in September 2014.

MEDIA COVERAGE

- "PhD and pregnant: How this researcher used motherhood as a motivator", **Silicon Republic**, 8^{th} March 2022. Click Here.
- Recorded a promotional video on career in cyber security for **Cyber Future Ireland.** Click Here

MEMBERSHIPS

- **Fellow IETE:** Membership Number F-501927
- **Senior Member IEEE:** Membership Number 93938851
- **Member ACM:** Membership Number 5188492
- **Member IET:** Membership Number 1101274147
- **Member AAAI:** Membership Number 647862
- **Member EurAI**

SOCIAL INITIATIVES

- Provided educational support and fostered a love for learning among children from underprivileged backgrounds under the auspices of All World Gayatri Pariwar (AWGP) in India from 2009 to 2015.
- Served as a member of the Student Gyan Movement from 2015 to 2019, an initiative by students of ABV-IIITM, India, dedicated to teaching underprivileged students in the vicinity of the institute.