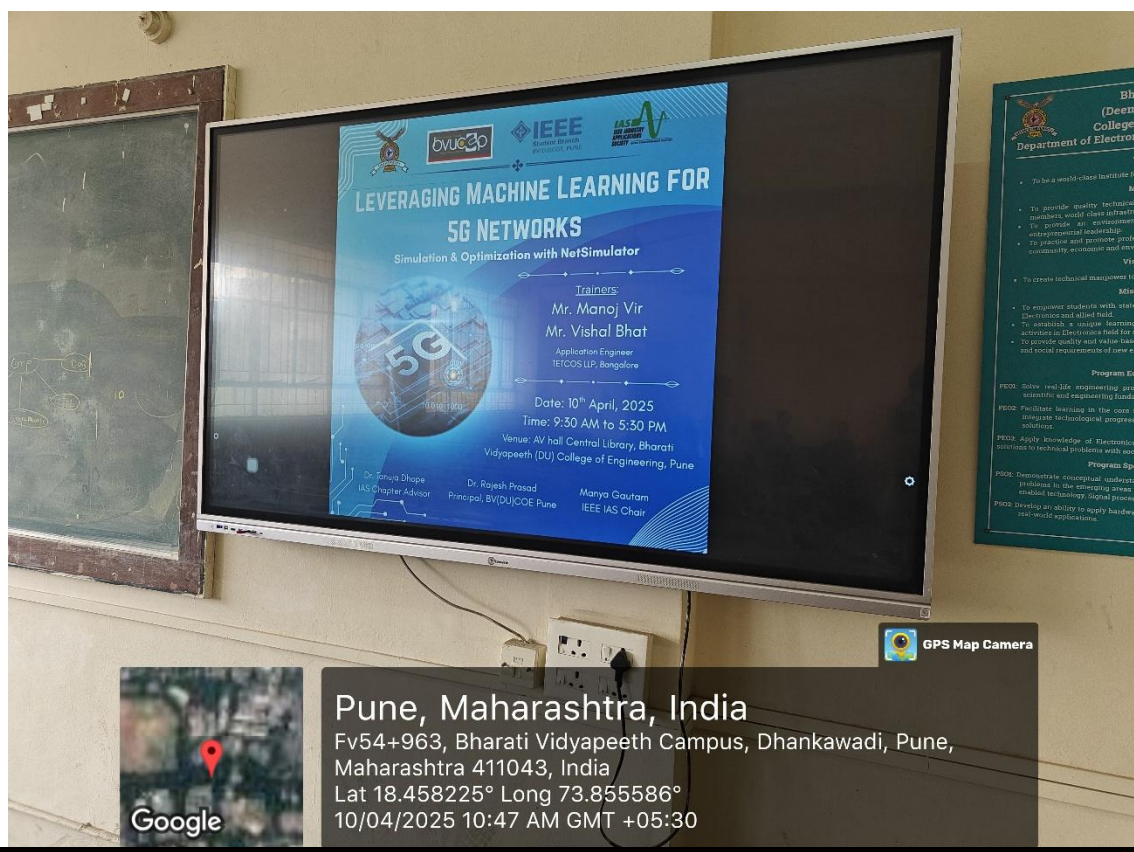


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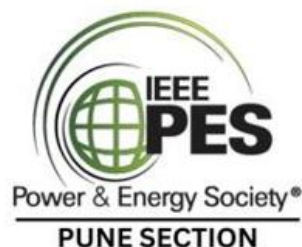
Event Title	Leveraging Machine Learning for 5G Networks: Simulation & Optimization with NetSimulator – IEEE IAS chapter, IEEE Student Branch, Bharati Vidyapeeth (DU) College of Engineering, Pune
Event Start Time	10 th April 2025, 09.30am (IST)
Event End Time	10 th April 2025, 05.30pm (IST)
Description of Event (with good quality photos)	A one-day hands-on workshop on 5G Wireless Networks and NetSim Simulation was conducted at the college on 10th April 2025, aiming at providing participants with an in-depth understanding of next-generation mobile networks and their simulation through NetSim. The event brought together students and faculty members interested in the fields of wireless communication, simulation technologies, and machine learning applications in telecom. The workshop began at 09:30 AM with the welcome address by Dr.Tanuja Satish Dhope, followed by students with an insightful session on the evolution from 4G to 5G, emphasizing the transformative capabilities of 5G technology. Key features such as high data rates, ultra-low latency, massive device connectivity, network slicing, and beamforming were discussed in detail, along with their practical use cases in smart cities, IoT, and Industry 4.0 applications. Following this, participants were introduced to NetSim, a powerful and widely used network simulator. The session covered the basics of simulating a 5G environment within NetSim, including key components such as gNBs (base stations), UEs (user equipment), and the 5G core network. Participants also explored configuration options related to scheduling algorithms, network slicing, and beamforming. The first hands-on session started at 10:45 AM, where participants learned to create a basic 5G network simulation. They configured nodes, set parameters such as frequency and bandwidth, and ran simulations to analyze basic network performance metrics like throughput, latency, and packet delivery. This session helped bridge the gap between theoretical knowledge and practical application. Later on, a technical session was held on 5G scheduling and network slicing, where participants were introduced to key scheduling algorithms like Proportional Fair and Round Robin. The session also explained static and dynamic slicing techniques, with examples of how different types of slicing serve various application-specific needs within a 5G network. After a lunch break, the second hands-on session began at 02:00 PM, focusing on advanced 5G scenarios. Attendees implemented Proportional Fair scheduling, simulated its effects, and compared performance metrics under different configurations. They also configured and analyzed both static and dynamic network slicing, gaining insights into how different slicing strategies affect the quality of service for multiple users with varying demands. The final hands-on session explored the integration of machine learning in 5G networks. Participants were introduced to use cases like predictive traffic management and anomaly detection. They then implemented ML-based scheduling and slicing strategies, and evaluated the performance improvements achieved through machine learning models in simulated 5G environments. The event concluded at 05:30 PM with a Q&A and wrap-up session, where key learnings from the day were summarized and participants had the opportunity to clarify doubts and engage in interactive discussions with the resource persons. Overall, the workshop provided a highly enriching learning experience, combining theoretical insights with practical skills. It helped students develop a foundational understanding of 5G technology and its implementation using industry-standard tools, thus equipping them with relevant knowledge for future academic and professional pursuits in the field of wireless communication and networking.



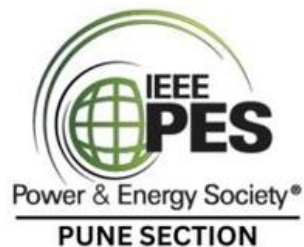




Type of Event Virtual/Hybrid/In-person	In-person
Location/ address (detail including pin code)	Room no. 301, WW-I, Bharati Vidyapeeth (DU) College of Engineering, Pune-Satara Road, Pune, Maharashtra 411043 Pune 411043
Trainers Name and details	Trainer: Mr. Manoj Vir Mr. Vishal Bhat Application Engineers TETCOS LLP, Bangalore
Trainer Topic	5G Wireless Networks and Network Simulation using NetSim



Trainer Topic description	The training began with an introduction to 5G wireless networks, covering the evolution from 4G to 5G and highlighting key features such as high data rates, low latency, and massive device connectivity. The concepts of network slicing and beamforming were also introduced, along with practical use cases in smart cities, IoT, and Industry 4.0. This was followed by an overview of NetSim and its 5G simulation capabilities. Participants were introduced to various components of 5G networks within NetSim, including gNB (base station), UEs (user equipment), and the core network. Configuration options such as scheduling algorithms, slicing, and beamforming were also explained. Subsequently, the topic of 5G scheduling and network slicing was addressed. Various scheduling algorithms, including Proportional Fair and Round Robin, were explained. The session also covered network slicing concepts, highlighting the differences between static and dynamic slicing, and discussed use cases for each slicing method. An advanced session on 5G network simulation was then conducted. Participants implemented different scheduling algorithms, configured static and dynamic slicing, and analyzed their impact on network performance, particularly for user equipment with diverse requirements. Finally, the integration of machine learning in 5G networks was introduced. Topics included dynamic resource allocation, predictive traffic management, and anomaly detection. The session concluded with the implementation of ML-based scheduling and slicing, followed by performance evaluation using machine learning models in a simulated 5G environment.
Event flyer	



Event Host Name with Organization Details	Dr. Tanuja S. Dhope, IAS Chapter Advisor, Bharati Vidyapeeth (DU) College of Engineering, Pune 411043
Total Number of Attendees	54
No. of IEEE Attendees	17