



M. Tech. ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NATIONAL INSTITUTE OF TECHNICAL TEACHERS TRAINING AND RESEARCH

(Ministry of Education, Govt. of India),
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NITTTR, CHENNAI

The National Institute of Technical Teachers' Training and Research, Chennai is a premier institution established in 1964 under the Ministry of Education, Government of India, dedicated to enhancing the quality of technical education in the country. It has been granted the "Institution Deemed to be University" status by the Ministry recently. This recognition acknowledges our 60 years of commitment to providing quality education and training, marking a significant milestone in our journey towards excellence in technical education and research.

Established to improve the standards of technical education, NITTTR offers a range of programs and services tailored to the needs of educators and institutions in the technical education sector. At the core of NITTTR's mission is the training and professional development of technical teachers. Through its various training programs, workshops, and courses, NITTTR equips educators with the necessary skills and knowledge to excel in their roles. These programs cover diverse topics such as curriculum development, teaching methodologies, educational technology, and quality assurance, ensuring that educators stay updated with the latest trends and practices in the field.

In addition to training, NITTTR also conducts research and consultancy activities aimed at improving the overall ecosystem of technical education. The institution engages in cutting-edge research to address key challenges and opportunities in the field, contributing to the advancement of knowledge and innovation. Moreover, NITTTR offers consultancy services to technical institutions seeking guidance on various aspects such as infrastructure development, curriculum design, and pedagogical practices.

NITTTR's commitment to excellence in technical education extends beyond its training and research initiatives. The institution actively promotes collaboration and networking among professionals in the technical education sector, fostering a community of practice where ideas and best practices are shared and exchanged. NITTTR plays a pivotal role in shaping the future of technical education in India. By providing high-quality training, conducting impactful research, and offering expert consultancy services, NITTTR continues to make significant contributions towards the enhancement of technical education standards and the development of a skilled workforce for the nation's growth and prosperity.



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

The Department of Computer Science and Engineering at the National Institute of Technical Teachers Training and Research (NITTTR) Chennai stands as a beacon of excellence in the realm of technology education. With a commitment to delivering cutting-edge education and fostering innovation, the department boasts a distinguished faculty with seasoned academics. The state-of-the-art facilities, including modern laboratories and advanced computing infrastructure, would provide an immersive learning environment. Complementing the rigorous academic programs, the department also offer short-term courses catering to professionals seeking to enhance their skills in the areas such as programming paradigms, Artificial Intelligence and Machine Learning, software development methodologies, blockchain technologies and cybersecurity. Through strategic industry partnerships and research initiatives, the department continuously align the curriculum with industry demands, equipping the learners with the expertise and practical experience needs to excel in today's dynamic technical landscape.

M. Tech. ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

The M. Tech. course offers a comprehensive exploration of Artificial Intelligence (AI) and Machine Learning (ML) principles, algorithms, and applications. Beginning with foundational topics, learners delve into mathematical concepts and data structures essential for understanding AI and ML algorithms. Advanced areas such as predictive analysis and deep learning are provided, alongside essential topics like data mining and computer vision. The course also includes specialized topics such as big data analytics, internet of things, blockchain technologies, social network analysis, reinforcement learning, optimization techniques, business analytics, and data security, providing learners with additional insights and skills crucial for the broader landscape of AI and ML applications.

Throughout the course, learners engage in capstone projects and hands-on exercises, allowing them to apply the concepts to real-world problems. They develop their skills in data interpretation, model building, and algorithm optimization, preparing them for roles in data science, machine learning engineering, and AI research. The course equips learners with the knowledge and skills needs to excel in the rapidly growing field of AI and ML.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- To establish a strong base in fundamental sciences, mathematics, and engineering principles, fostering comprehensive knowledge and proficiency.
- To nurture the capacity to grasp, interpret, and assess challenges in Artificial Intelligence while connecting them to real-world applications.
- To deliver extensive expertise for designing and creating novel products and innovative solutions to address real-world issues in the fields of Computer Science and Engineering.
- To instil self-confidence, cultivate a professional and ethical mindset, foster effective teamwork, nurture leadership qualities, enhance proficiency in soft skills, and develop the ability to connect engineering with social issues.

PROGRAMME OUTCOMES (POs)

- An ability to independently carry out research / investigation and development work to solve practical problems.
- An ability to write and present a substantial technical report / document.
- An ability to demonstrate a degree of mastery over the CSE programme with Artificial Intelligence. The mastery should be at a level higher than the requirements in the appropriate bachelor programme.
- An ability to recognize the need for applying efficient AI based solutions to improve the quality of life.
- An ability to function effectively as an individual and a team member, in project and product development and to follow professional ethics in the career.
- An ability to amalgamate multi-disciplinary approaches in order to design, develop, implement, and assess solutions for a variety of real-world issues.



CORE COURSES

- Mathematical Foundations for Computer Science Engineers.
- Advanced Data Structure and Algorithms
- Artificial Intelligence
- Predictive Analytics
- Data Interpretation and Visualization
- Deep Learning
- Data Mining
- Architectures for AI
- Computer Vision
- Foundations of Data Science

ELECTIVE COURSES

- Cloud Computing
- Natural Language Processing
- Block chain Technologies
- Big Data Analytics
- Internet of Things
- Business Analytics
- Social Engineering
- Social Network Analysis
- Data Security
- Reinforcement Learning
- Optimization Techniques
- Recommender Systems
- Cognitive Computing

FACILITIES OF DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING





THE DIRECTOR

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