

AIM & Scope :

Quantum machine learning is a research area that explores the interplay between ideas from quantum computing and machine learning. Quantum machine learning (QML) can advance artificial intelligence to an unimaginable extent. **The key objectives of FDP are as follows:**

1. To discuss the current issues and challenges of AI and QML.
2. To provide deeper insights into Artificial Intelligence and QML in various domains of engineering and management.
3. To explore different types of research in AI, ML and QML.
4. To provide knowledge and a platform for researchers to write quantum algorithms to perform machine learning tasks.
5. To identify potential research areas and projects related to AI and quantum machine learning, fostering further exploration, innovation and Interdisciplinary Collaboration.
6. To provide opportunities for participants to network with experts in the field, foster a sense of community, and encourage ongoing discussions and Knowledge sharing.
7. To develop digital content and educational materials such as course modules, tutorials, And FDPs, they can integrate into their own teaching activities.

Topics to be covered

1. **Machine Learning, Artificial Intelligence:** Basic Concepts of Machine learning, Types of Machine learning, Classification and Regression algorithms, Recent Trends, Opportunities and challenges in Artificial Intelligence and machine Learning.
2. **Fundamental of Quantum Machine Learning:** Encoding, Quantum Supervised, Semi-supervised and reinforcement Learning, Quantum NLP, Quantum Transfer Learning.
3. **Language and Tools for AI, ML and QML:** Introduction to different languages and tools; Python Basics, Python Packages for Data Sciences, Manipulating and Processing Data in Python, PennyLane for quantum differentiable programming.
4. **Data Processing, Data Manipulation and Visualization:** Data collection and binding, importance of data processing and manipulation, Feature Selection and Feature Extraction, various techniques of Data processing and Data Manipulation. Visualization techniques, Interactive visualization, visualizing big data.
5. **Foundations of Deep Learning :** Shallow Vs. Deep Neural Networks, training deep Neural Networks, gradient vanishing and explosion problem, Auto-encoder, pre-training, dropout, adam optimization), CNN, RNN, GANs, Optimization and Application of Deep Learning
6. **Computer Vision:** Image processing, Object detection, recognition and tracking.
7. **Applications:** AI in Healthcare, Image Processing, Facial Expression Detection, Natural Language Processing.



Venue

Seminar Hall
Department of CS & IT
Maulana Azad National Urdu University
Gachibowli, Hyderabad, Telangana, 500032



One Week / Six Days Offline AICTE Training and Learning (ATAL)
Faculty Development Programme (FDP)

on

Artificial Intelligence and Quantum Machine Learning (AI & QML)

[20th - 25th Nov, 2023]



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Prof. Syed Ainul Hasan
Hon'ble Vice Chancellor, MANUU

Patron

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Registrar, MANUU

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OFFLINE MODE
20.11.2023 TO 25.11.2023

Organized By

Department of Computer Science
and
Information Technology
Maulana Azad National Urdu University
Gachibowli, Hyderabad, 500032



MANUU

Maulana Azad National Urdu University (MANUU) is a central university established in the year 1998 by an Act of Indian Parliament, with all India Jurisdiction, to promote and develop Urdu language, impart vocational and technical education in Urdu medium through conventional and distance modes and focus on women education. The headquarter of the University is at a central location of Gachibowli in Hyderabad and spread over 200 acres. Over the last twenty years, MANUU is working as a mission-driven University with a strong commitment to teaching, learning, research and innovation along with a special focus on women education to fulfill its statutory mandate. The University has a unique distinction of offering courses and programs from elementary to higher education in general and professional, technical and vocational streams in particular in Urdu. It is catering to the educational needs of the large sections of unreached Urdu population of the society and delivering well established Schools, Departments, Centres and Satellite campuses. The university is offering 17 Ph.D., 12 M. Phil, 25 Post Graduate and 18 Under Graduate programs and a few Diploma and Certificate Courses. The University has approximately 400 regular faculty, 400 non-teaching staff and 6000 regular students from across India. Furthermore, the diversity of University Campus is also good with proportionate male-female ratio and representation of different sections of the society.

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

Department of Computer Science and Information Technology provide an excellent learning environment with dedicated young faculty members, state-of-the-art laboratories and innovative academic processes. We focus on providing an in-depth knowledge in the field of Artificial Intelligence, Personalized learning,

Certificate

A Certificate to the participants will be issued on successful completion of FDP through online assessments/ quiz.

Resource Person

The session will be handled by the experts on the subject from both industry & academia (IITs / NITs, Central Universities, R&D Labs)

Machine learning, Computational sustainability, Block chain technology, semantic web, internet of things (IoT) and other allied fields of computer science & IT. We aspire our students towards becoming next generation IT professionals capable of generating Programming and logical skills, providing networking solutions and becoming leaders in software industry, government and academia.

ABOUT ATAL

AICTE is committed for development of quality technical education in the country by initiating various schemes.

ATAL VISION

To Empower faculty to achieve goals of Higher Education such as access, equity and quality.

ATAL MISSION

To establish AICTE Training and Learning (ATAL) cell in all the technical institutions, Universities, Deemed-to be Universities and other institutions of technical learning. AICTE will support for establishment of AICTE Training and Learning (ATAL) cell in all the technical institutions, Universities, deemed to be Universities and other institution of technical learning.

ABOUT AI & QML FDP

The proposed FDP is designed to provide the state-of-the-art trends and advancements in Artificial Intelligence (AI), Classical & Quantum Machine Learning (QML) and its applied application in engineering and management. The FDP will focus on theoretical aspects as well as on providing hands on experience to the participants. The participants will be introduced to the fundamentals of AI, QML and develop the understanding of how to use QML. The participant will be trained and exposed to the emerging areas of future of AI, ML and QML.

The FDP will provide a forum for the interaction of Artificial Intelligence and Machine Learning researchers and academicians to discuss the potential applications and recent advances in AI and QML. The FDP will also provide a platform to learn AI and QML using different tools, Python programming language and quantum differentiable programming. The FDP also aims to foster the exchange of ideas and creates an opportunity for collaboration in frontier areas of AI and QML.

Who Should Attend ?

The program is open to the members of AICTE affiliated Institutes i.e., faculty members, Research Scholars, PG Students. The Selection is based on first cum first server basis

Registration Process:

Please Sign Up through :

<https://www.aicte-india.org/atal>

1. Click on FDPs tab
2. Select type: "ATAL", Month: "November", Thrust Area: "Engineering", FDP Type: "Technical",
3. Find Application Number : 1690958652
4. Click on "+" Button to register
5. Participant can check registration by clicking on Applied FDP.

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