



Teaching Learning Centre  
and  
Research Development & Services Cell  
Ramanujan College, University of Delhi  
in Collaboration

**Jaypee Institute of Information Technology, Noida**

Under the aegis of  
PANDIT MADAN MOHAN MALVIYA NATIONAL  
MISSION ON TEACHERS AND TEACHING  
MINISTRY OF EDUCATION

Two Weeks Online Summer School on  
**Quantum Computing and Its Applications(QCA'22)**  
July 25- August 6, 2022



सत्यमेव जयते  
Ministry of Education  
Government of India

*Technically co-sponsored  
by Department of Computer  
Science, University of  
Delhi, Delhi*

#### ABOUT FDP

Quantum computing is one of the fast emerging key disruptive technologies of present times. It is basically a new paradigm of computing with the potential to solve complex problems. Using quantum computing, the problems which were having exponential time complexity are solvable in polynomial time like decrypting public key cryptography algorithms. Quantum computing mainly focuses on developing the computer technologies based on the principles of quantum theory. Quantum computers use quantum bits or qubits due to which they exist in more than one state as compared to classical computers which can only encode information in binary states that is 1 and 0. The field of Quantum computing began in 1980s. But it has become more popular now due to the availability of high performance computing systems. It is widely being used in diverse application domains like finance, searching applications, big data analytics, drug design and discovery, cryptography etc.

#### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING / IT

The Department of Computer Science & Engineering and Information Technology is a center of excellence that provides high quality education to

#### ABOUT US

Jaypee Institute of Information Technology (JIIT), Noida was established in the year 2001 and has been declared as a "Deemed to be University" under Section 3 of UGC Act 1956. The university is accredited by the National Assessment and Accreditation Council (NAAC) of the UGC, recognised by the All India Council of Technical Education (AICTE) and listed in NIRF (MHRD) engineering category ranking 2016-2021. JIIT's state-of-the-art & environmentally conditioned campus comprises smart buildings with Wi-Fi connectivity covering the Academic Block, Business School cum Research Block, Faculty Residences, Student Hostels and Annapurna. Well-equipped modern laboratories and an intellectually stocked Learning Resource Centre provide a pleasant and stimulating ambience. For more info visit: <http://www.jiit.ac.in>

#### WHO CAN PARTICIPATE

The program is open for all the industry personnel, faculty members, research scholars, graduate and post graduate scholars working in the field of

develop future leaders in all aspects of computing including education and entrepreneurship, contributes practically relevant and cutting edge research, and catalyzes IT entrepreneurship. It offers 3 undergraduate and 5 post graduate engineering programmes. Currently under graduate, post graduate, and doctorate students are actively engaged in frontier research domains of IT.

### RESOURCE PERSONS

- Prof. Sven Groppe, University of Lübeck, Germany
- Prof. Anirban Pathak, IIIT, Noida
- Prof. Krishna Asawa, IIIT, Noida
- Dr. Abhinav Deshpande, California Institute of Technology, California
- Ms. Yoshika Chabra, IBM Quantum Ambassador, India
- Mr. Abhigyan, Senior Quantum Computing Developer, BosonQ Psi
- Dr. Omprakash Patel, Mahindra University, Hyderabad
- Dr. Anant Kulkarni, Fr. C. Rodrigues Institute of Technology, Bombay
- Dr. Pawan Mehra, DTU, Delhi
- Dr. Gyan, IIIT, Kota
- Dr. Devi Priya, Kongu Engineering College, Perundurai
- Dr. Amit Verma, IIIT, Noida

### HOW TO APPLY?

To register for this FDP, the applicant is required to fill the registration form on or before deadline.

<https://forms.gle/PWD6m7KeMF6d2ZHR5>

Last date of submission of application form: **25th May 2022**

Display list of selected participants: **30th May 2022**

*No Registration Fee*

*E-certificates will be provided to participants with 70% attendance and 70% marks in Quiz.*

**For any query related to registration kindly contact:**

Dr. Payal Khurana Batra @: [payal.kb@jiit.ac.in](mailto:payal.kb@jiit.ac.in)

Contact no: 0120-4195897, Mobile no: +91-9650803659

computer science, engineering, information technology and other related domains.

### PROGRAMME HIGHLIGHTS

Following areas (not limited to) would be focused in the FDP

- *Quantum Computing Fundamentals*
- *Introduction to Qubits and Operations*
- *Classical logic gates to Quantum Logic Gates*
- *Quantum Algorithms*
- *Quantum Error Correction*
- *Quantum Simulation*
- *High Performance Computing and Quantum Computing*
- *Introduction to Quantum Machine Learning and its applications*
- *Quantum Risk to Cyber Security*
- *Quantum Cryptography and Quantum Cryptanalysis*
- *Research scope and directions in quantum technologies and quantum computing*
- *Applications of Quantum computing in science and engineering*

### TECHNICAL SPONSORS:

Neelima Gupta, Professor, Department of Computer Science, University of Delhi

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### COORDINATORS:

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