Leading the way in Quantum & AI Innovations

QUANTUM AI
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QUANTUM AI GLOBAL

COMPANY SNAPSHOT

Quantum AI Global stands at the forefront of the AI and Quantum revolution, delivering the essential 'picks and shovels' of tomorrow's technology. With a legacy of pioneering research, breakthrough productization, and real-world commercial deployment, we are powering the infrastructure behind the next technological era

Founding Nov 2019

Staff 65+ across 3 offices

Strengths

- Market Ready Products
- 8 PhDs, 7 Research scholar pursuing PHD as employees
- In Revenue Mode

Geographies INDIA, US, UAE

WINNER nasscom emerge 50 awards 2024

Trusted By

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What we DO

RESEARCH to APPLICATION

"Discovery is designed to translate"

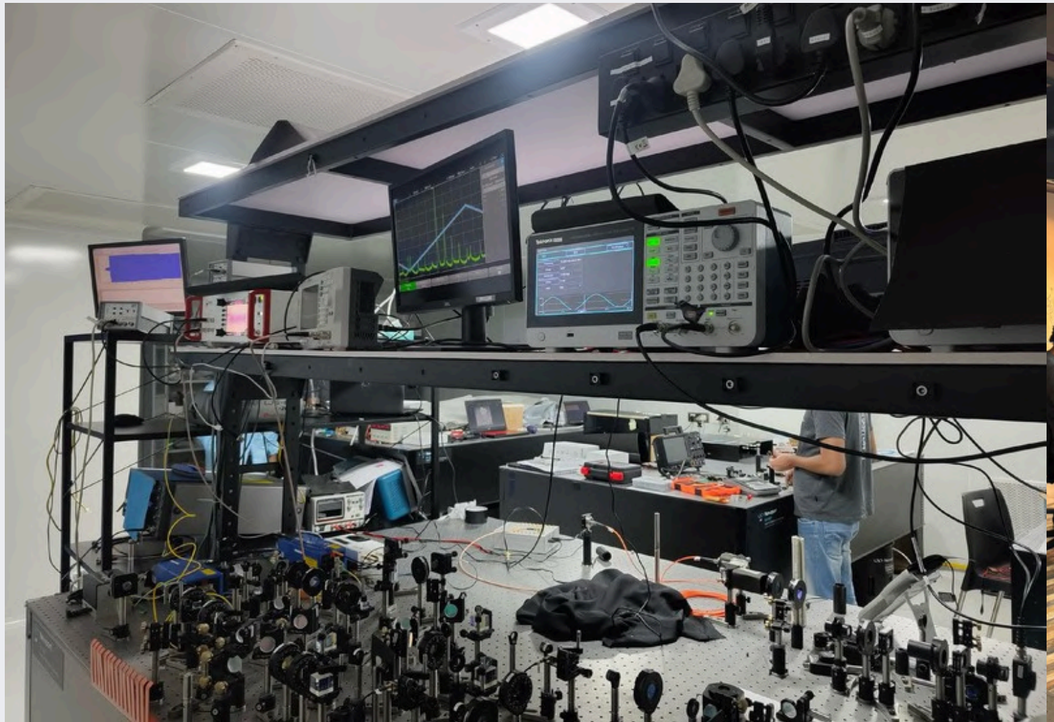
APPLICATION to PRODUCTIZATION

“High-powered product factory, where solutions are forged for impact”

PRODUCTIZATION to COMMERCIALIZATION

"Change **industries and shape a Quantum and AI powered future”**

OUR RESEARCH LAB AND CORPORATE OFFICE



OUR IP's

1. **Quantum-Resistant Cryptographic Systems for Secure Communication ("Patent Granted")**
2. **Rare-Earth Ion Doped Material-Based Quantum Memory ("Patent Granted")**
3. **Input Laser Control Box (Patent Granted)**
4. Quantum Memories (Ultra-long storage assisted 2nd Gen Quantum Memory.
5. Long Distance MDI-QSDC Protocol
6. Optimal Quantum Routing Protocol and Path Finding Algorithm for Quantum Network
7. System and Method for Optimized Quantum Computing with Sequential Gate Teleportation
8. Quantum Memory Box
8. Quantum Random Number Generation QRNG with Digital Quantum Simulation
9. QubitIQ: An Intelligent System for Quantum Encoding Templates Recommendations
10. Long Distance MDI-QSDC protocol.
11. Software Platform for Modelling and Simulation of Quantum Network Communication
12. Rubidium-based Magnetometer For Bio-Sensing Application
13. Measurement Device Independent-QSDC
14. Secure Quantum Multiparty XOR Protocol
15. Adaptive AI-Driven Hybrid Laser Locking for Quantum Sensing and Precision Applications.

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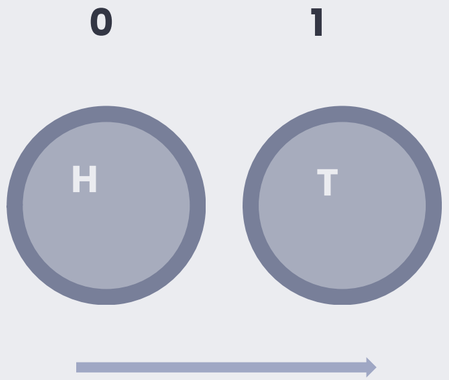
WHAT IS
QUANTUM TECHNOLOGY?

Quantum Technology

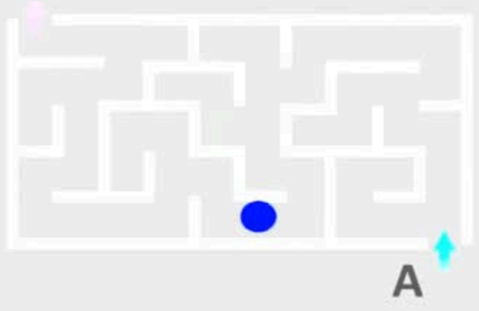
CLASSICAL COMPUTING



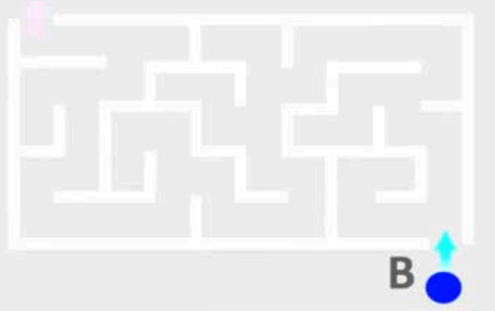
QUANTUM COMPUTING

Highly Secure

CLASSICAL COMPUTING



QUANTUM COMPUTING



Extremely Fast

Quantum Superposition

"The Spinning Coin"

Imagine flipping a coin and freezing it mid-air whilst it's spinning. Until it lands, it's neither heads nor tails – it's both at the same time!
In the quantum world, particles can exist in multiple states simultaneously, just like our spinning coin. A quantum particle can be in two places at once, spinning both clockwise and anticlockwise, or have multiple properties simultaneously.

Key Point: The "coin" only "decides" its state when we observe it – this is called "wave function collapse."

Quantum Entanglement

"The Synchronised Dancers"

Perfect Connection

Picture two dancers who have practised together so perfectly that even when separated by vast distances, they perform identical moves instantaneously.

Instant Response

When one spins left, the other automatically spins right - no matter how far apart they are! This is quantum entanglement in action.

Spooky Science

Einstein called this "spooky action at a distance" - measuring one particle instantly determines its entangled partner's state.

Quantum Teleportation

"The Ultimate Magic Trick"

The Setup

Imagine a magician who can make an object completely disappear from one box and instantly appear in another box across the room.

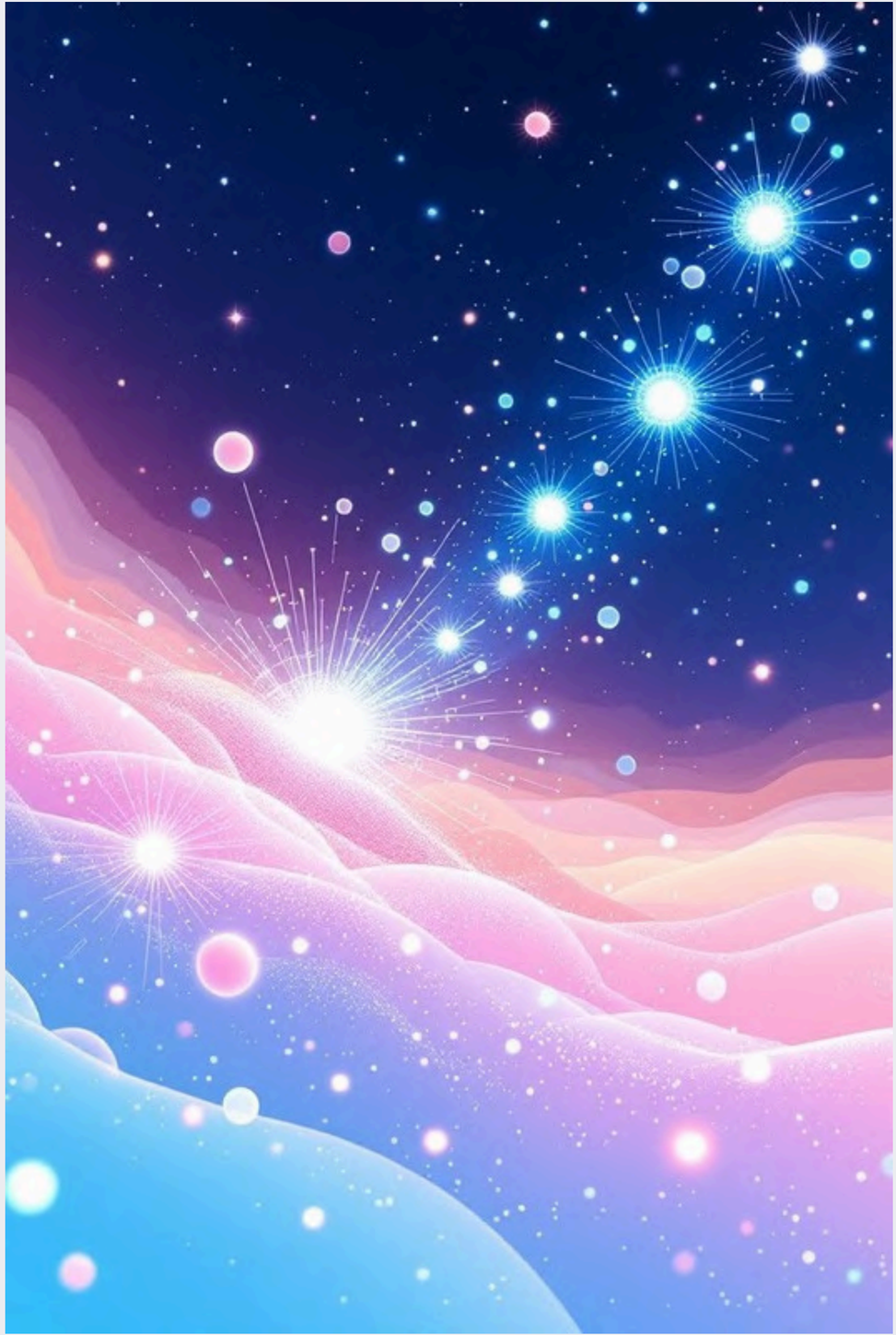
The Twist

Here's the remarkable part: it's not the object itself that travels, but all its properties and information!

The Reality

Quantum teleportation transfers all the quantum information of one particle to another particle far away, using entanglement as the connection.

Key Point: The original particle is destroyed in the process, but its exact quantum state is perfectly recreated elsewhere. It's like faxing the particle's blueprint!



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Why Does This Matter?

These strange quantum behaviours are the foundation for revolutionary technologies

Quantum Computers
Using superposition to process multiple calculations simultaneously, solving problems impossible for classical computers.

Ultra-Secure Communications
Using entanglement for unbreakable encryption that detects any attempt at eavesdropping.

Precise Sensors
Using quantum effects for incredibly accurate measurements in medicine, navigation, and scientific research.

The quantum world may seem bizarre, but it's the key to tomorrow's revolutionary technologies!

Quantum Technologies: Four Pillars

Quantum Computing

- Uses qubits (superposition + entanglement) to solve problems classical computers can't
- Applications: cryptography, optimization, drug discovery

Quantum Communication

- Enables ultra-secure data transfer using quantum entanglement & quantum key distribution (QKD)

Quantum Sensing

- Exploits quantum states to measure time, magnetic fields, gravity, or position with extreme precision
- Better than classical sensors

Quantum Materials

- Novel materials: superconductors, topological insulators, NV centres in diamond, 2D materials
- Engineered to harness quantum effects for devices and applications

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Applications Of Quantum Technologies

Artificial Intelligence & Machine Learning

Telecommunication

Drug Design & Development

Defense

Cybersecurity & Cryptography

Aeronautics & Space

Financial Modelling

Logistics Optimization

Weather Forecasting

Computational Chemistry

Quantum Threat

Current cryptographic standards	Type	Purpose	Impact from large scale quantum computer
AES	Symmetric	Encryption	Larger key sizes needed (128-256 bits)
SHA-3	Hash function	Hashing	Larger output needed (128-284 bits)
RSA	Asymmetric	Signatures, key establishment	No longer secure
ECDSA, ECDH (elliptic curve cryptography)	Asymmetric	Signatures, Key exchanges	No longer secure
DSA (finite field cryptography)	Asymmetric	Signatures, key exchanges	No longer secure

Note: AES = advanced encryption standard; SHA-3 = secure hash algorithm 3;
RSA = Rivest-Shamir-Adleman cryptosystem;
ECDSA = Elliptic Curve Digital Signature Algorithm;
ECDH Elliptic-curve Diffie-Hellman; DSA Digital Signature Algorithm.

Why security infrastructure been questioned in Quantum Era!

"Harvest Now, Decrypt Later"

Computationally secure encryption methods → "Computational Hardness" → Eve with
Classical Computer (Comm. Secure)
Quantum Computer (Comm Insecure)

Quantum Computing power

Shor's factorization algorithm

Grover's search algorithm

Worldwide accepted Encryption and Hashing Standards

Public key (RSA, ECC) cryptography, Private key (AES) cryptography, Hash signatures (MD5, SHA256) are worldwide accepted primitives in cybersecurity.

Shor's attack: Death sentence to potentially all existing public key schemes.

Grover's attack: Reduces search space of all symmetric keys and hash functions to half.

"Cryptographically Relevant Quantum Computer (CRQC) is a quantum computer powerful enough and equipped with the software necessary to break the cipher keys used today in encryption."

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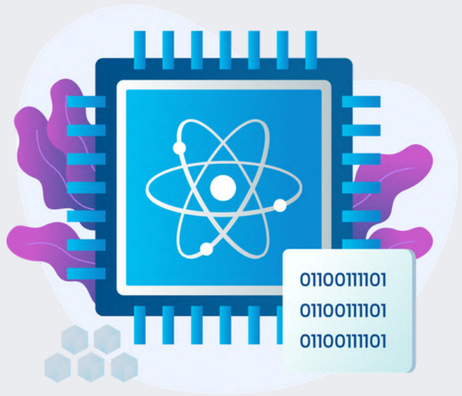
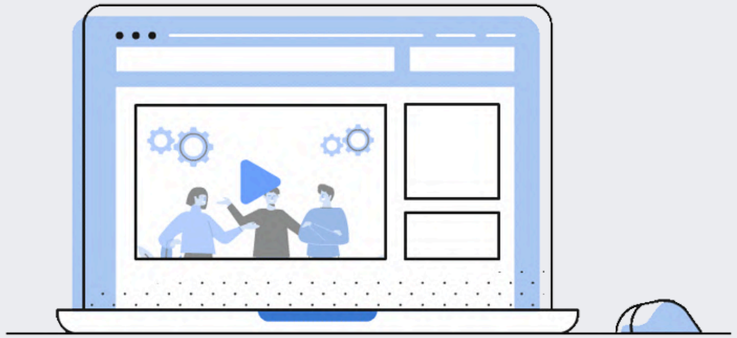
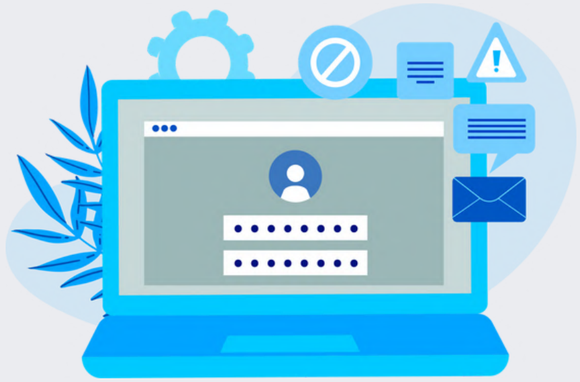
Y2Q – Year to Quantum







What is Y2Q?

Y2Q refers to the time when quantum computers will be powerful enough to break traditional forms of encryption.

Who is at Risk?

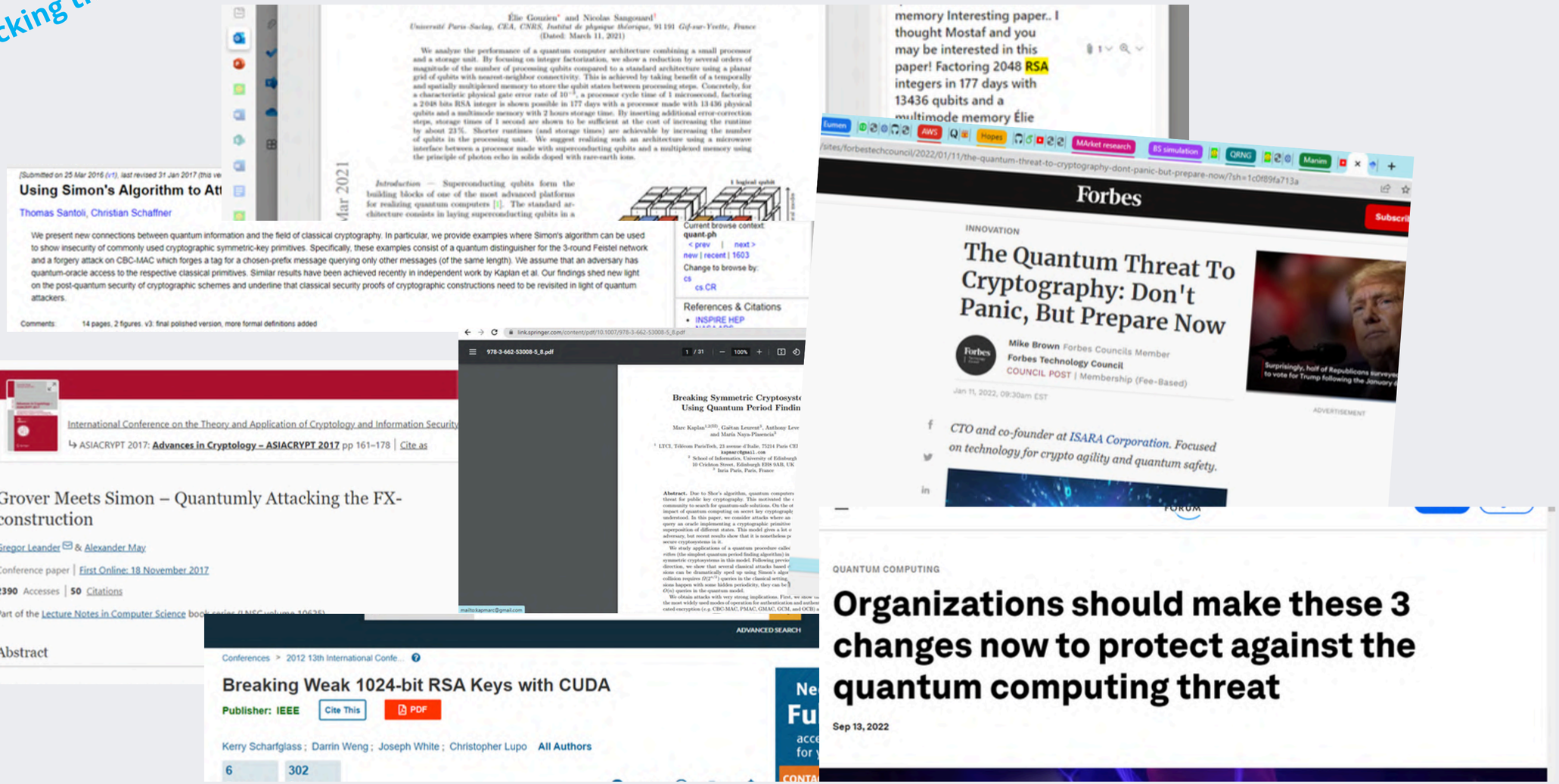
Any organization that stores and transacts sensitive information, from banks to government agencies are at risk from Y2Q.

Solutions for Y2Q

One solution is the development of **quantum-safe cryptography**, which uses quantum mechanics to protect against quantum attacks & QKD

Y2Q a Global Threat

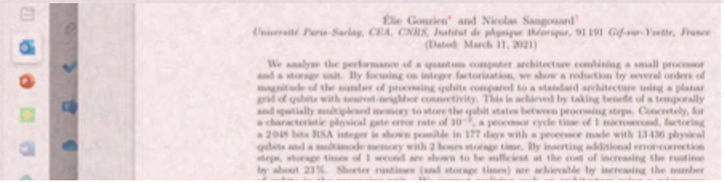
Quantum Computing threat is knocking the doors!!



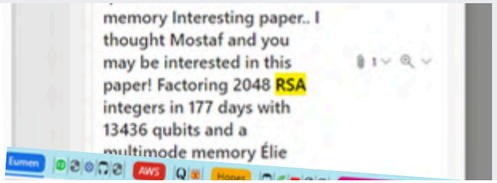
Rising Threat To Communication Security And Confidential Data Storage

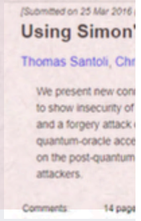
Y2Q a Global Threat

Quantum Computing threat is knocking the doors!!


Élie Gouzien* and Nicolas Sangouard†
Université Paris-Saclay, CEA, CNRS, Institut de physique théorique, 91191 Gif-sur-Yvette, France
(Dated: March 11, 2021)

We analyze the performance of a quantum computer architecture combining a small processor and a storage unit. By focusing on integer factorization, we show a reduction by several orders of magnitude of the number of processing qubits compared to a standard architecture using a planar grid of qubits with nearest-neighbor connectivity. This is achieved by taking benefit of a temporally and spatially multiplexed memory to store the qubit states between processing steps. Concretely, for a characteristic physical gate error rate of 10^{-3}, a processor cycle time of 1 microsecond, factoring a 2048 bits RSA integer is shown possible in 177 days with a processor made with 13 436 physical qubits and a multimode memory with 2 hours storage time. By inserting additional error-correction steps, storage times of 1 second are shown to be sufficient at the cost of increasing the runtime by about 23%. Shorter runtimes (and storage times) are achievable by increasing the number





PC MAG

Chinese Researchers Reportedly Crack Encryption With Quantum Computer

PC Mag

October 14, 2024 · 2 min read

1

Grover Meets Simon – Quantumly Attacking the FX-construction

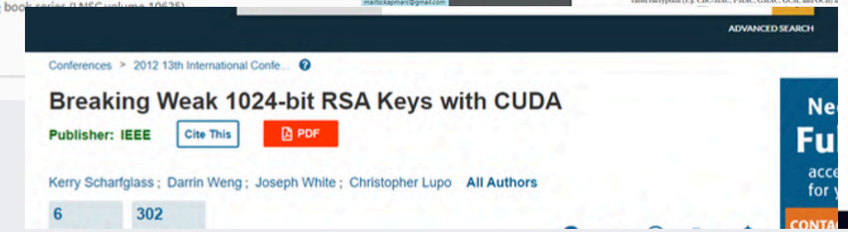
Gregor Leander & Alexander May

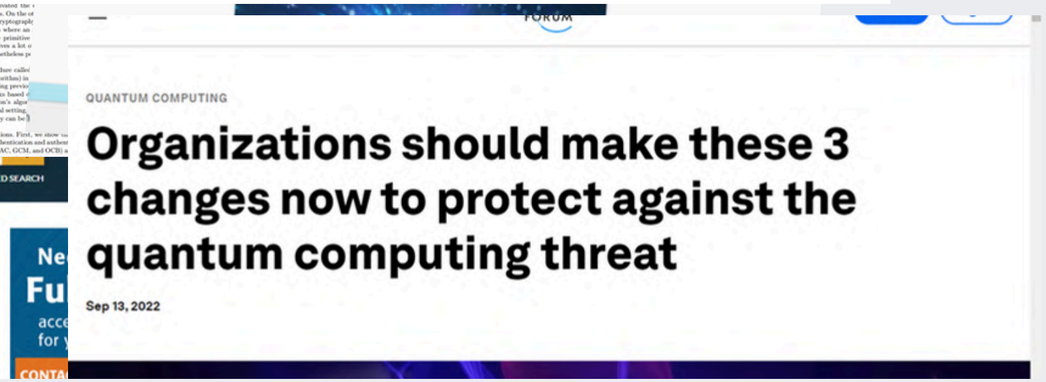
Conference paper | First Online: 18 November 2017

2390 Accesses | 50 Citations

Part of the Lecture Notes in Computer Science book series (LNSC, volume 10624)

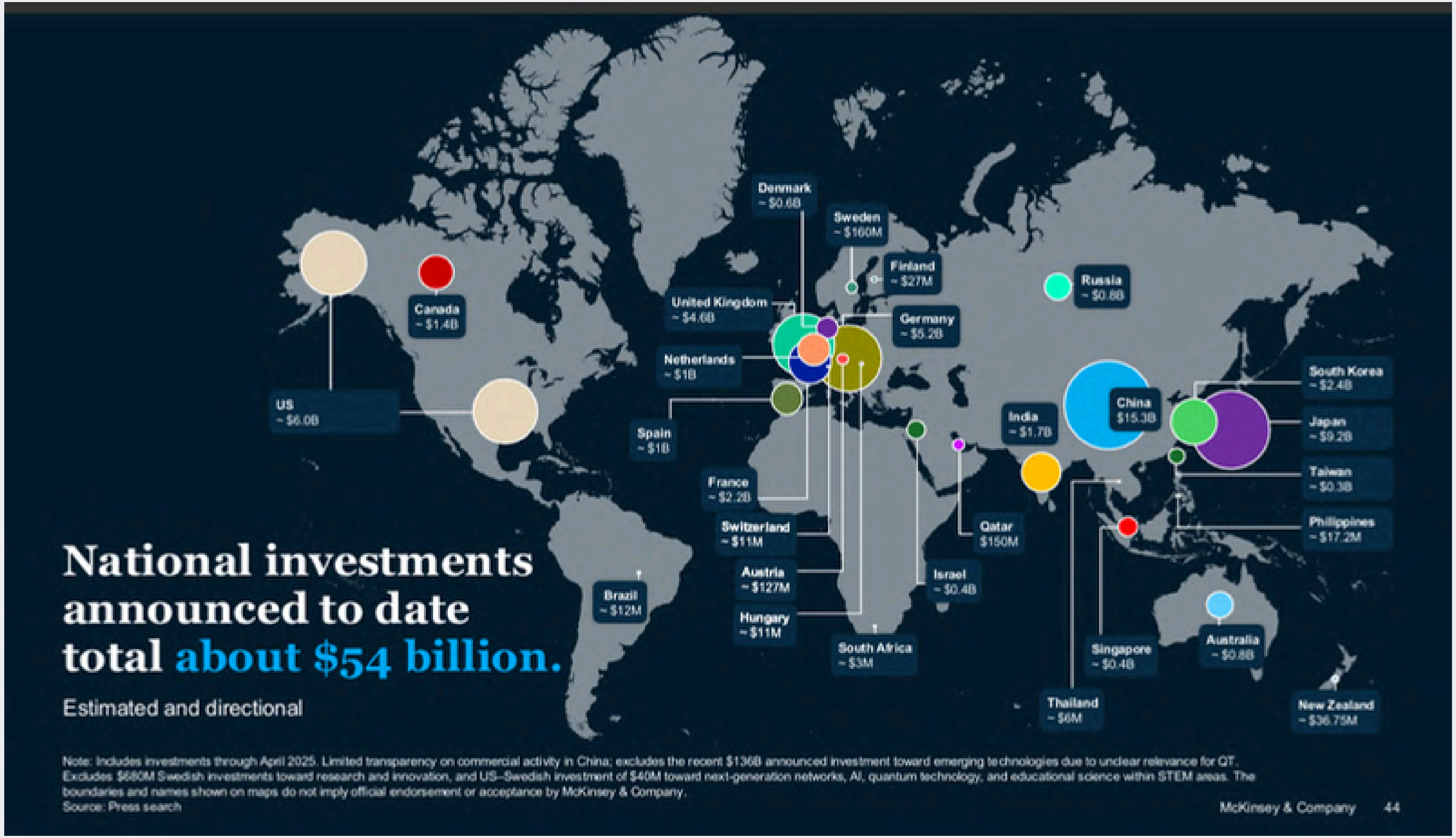
Abstract





Rising Threat To Communication Security And Confidential Data Storage

Global Quantum Investments By Country



Note: Includes investments through April 2025. Limited transparency on commercial activity in China; excludes the recent $136B announced investment toward emerging technologies due to unclear relevance for QT. Excludes $680M Swedish investments toward research and innovation, and US–Swedish investment of $40M toward next-generation networks, AI, quantum technology, and educational science within STEM areas. The boundaries and names shown on maps do not imply official endorsement or acceptance by McKinsey & Company.
Source: Press search

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LONG-TERM SOLUTION

QUANTUM KEY DISTRUBUTION (QKD) NETWORK NATIONWIDE

IMMEDIATE SOLUTION

QUANTUM SAFE NETWORK
FOR INDUVIDUAL ORGANIZATIONS

QUANTUM AI GLOBAL

Q-Forte: Quantum Assured InfoSec Platform

OUR PRODUCTS

QUANTUM CRYPTOGRAPHY

Q-FORTE

Quantum Assured information Security Platform

QUANTUM COMMUNICATION

QUANTUM MEMORY

EPS QKD

Quantum Hardware Building the future of Quantum Internet

QUANTUM SENSING

QUANTUM MAGNETO-METER

Quantum Biosensor for Healthcare

Quantum Experimentation Kits for Academia

Proposed solution for National Quantum Mission (NQM)

QUANTUM MEMORY

Quantum Storage Demonstrator Toolkit

An educational toolkit to explore Quantum Memory, highlighting its role in Quantum Storage, long-distance entanglement, and secure Quantum Key Distribution.

EPS QKD

Entanglement-based Quantum Key Distribution Experimentation kit

An interactive toolkit for exploring entanglement-based Quantum Key Distribution, Bell's Inequality, single-photon sources, and more — all in one system.

Quantum Sensing

Quantum Sensing and Atomic Physics

A hands-on kit for frequency and length metrology using atomic spectroscopy. Enables experiments in interferometry, Zeeman effect, ECDL, laser locking, and quantum magnetic sensing with Rb — ideal for learning atom-based precision measurement.

QNTSim

Quantum Network Simulator

India’s first interactive quantum network simulator for academia to explore entanglement and secure communication through hands-on protocol demos and realistic network scenarios.

Quantum Cluster

Quantum Cluster

Accelerate Quantum Learning, Algorithm Development and Quantum Processing Unit (QPU) performance approximation.

RESEARCH & POC DEVELOPMENT IN PROGRESS

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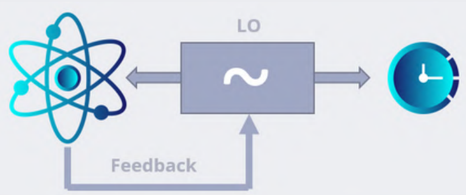
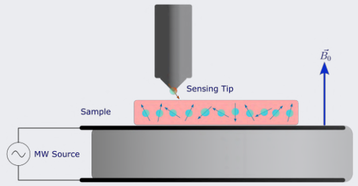
01 Atomic Clock

Unlocking the secrets of time, ultra-precise atomic clocks offer unmatched accuracy for critical applications in navigation and communication, with unmatched precision.



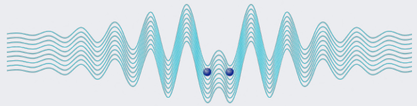
02 Quantum Magnetometry for MRI

To design highly sensitive, compact, and miniaturized magnetic field sensors for magnetic resonance imaging.



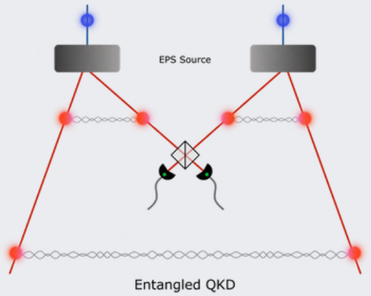
03 Quantum Gravimeter

High precision gravitational field sensor for petroleum and mineral prospecting, geophysical surveys, seismology, and metrology.



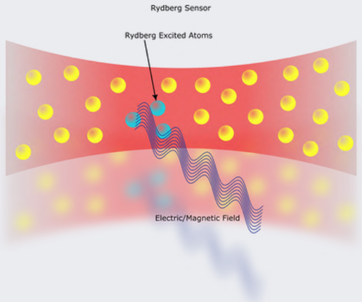
04 Quantum Repeater

Quantum repeaters employ a process known as entanglement swapping. This involves creating entangled pairs of photons, sending them to intermediary nodes, and performing entanglement swapping operations to generate new entangled pairs.



05 Rydberg Sensor

Rydberg sensors leverage the extreme sensitivity of Rydberg atoms to electric and magnetic fields to detect and measure these fields with high precision. Their unparalleled sensitivity allows for the detection of very weak signals.



CORE TEAM

Sanjay Chittore, Founder & CEO
Entrepreneur
deep understanding of the challenges and opportunities facing these industries

Col Kapil Jaiswal (Retd), CTO
Adjunct Prof, Cyber, Amrita VV, Ex-Director (InfoSec), MoD, GOI
Lead national level Info Security and Cryptography Research team of 100+ domain specialists and Cyber Operations team of 50+ Red Team members

Dr. Sachin Barthwal, Head of Quantum Technology
PhD in Physics from University of Hyderabad
Experimental Atomic Physicist with extensive experience of in Laser cooled Atomic Spectroscopy research including Quantum Sensor Technology

Dr. Diksha Sharma, Quantum Research Scientist
Research scholar in Quantum Machine Learning, IIT Jodhpur
Experienced in quantum machine learning models for real-world tasks, developing interpretable, scalable, and resource-efficient quantum models.

Dr. Monika, Quantum Sensing Lead
PhD in Physical Science from AcSIR–NPL
Experimental quantum optics physicist specializing in Rydberg atom based RF E-field sensing, quantum memory and atomic spectroscopy.

Dr. Avinash Kumar, Quantum Optics Scientist
PhD in Physics , Tata Institute of Fundamental Research
Experimental physicist specialized in designing and building narrow linewidth laser cavities with expertise in optics and high-resolution spectroscopy.

Dr. Dhanshre Thulkar, Head of Product Management
PhD in Engineering from University of Mumbai
Researcher in machine learning and image processing and experience in working with industry and academia

Diana Dsouza, Head of Sales and Business Development
Business Development leader with 18 years expertise in end-to-end product commercialization. Adept at ensuring successful market entry and driving robust sales performance.

Rikteem Bhowmick, Quantum Communications Lead
Research scholar pursuing PhD in Quantum Communication
Experienced in developing entangled photon sources and designing quantum key distribution systems.

Devendra Mishra, Quantum Hardware Lead
Research scholar pursuing PhD in Quantum Optics IITH
Experienced in Quantum Optics experimentation and Quantum communication Hardware (Quantum memory, Quantum Repeater, Etc.)

Rama Theja, Opto Electronics Lead
Masters in Quantum computing from DIAT Pune
Quantum engineer with expertise in setting up quantum sources, QKD testbeds, and quantum memory hardware with integrated control electronics.

Neelesh Singh Katoch, Quantum Software Engineer
Masters in Cybersecurity from DIAT Pune
Experienced engineer and researcher working on quantum-safe cryptography and cybersecurity, designing and implementing scalable, standards-compliant production solutions.

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