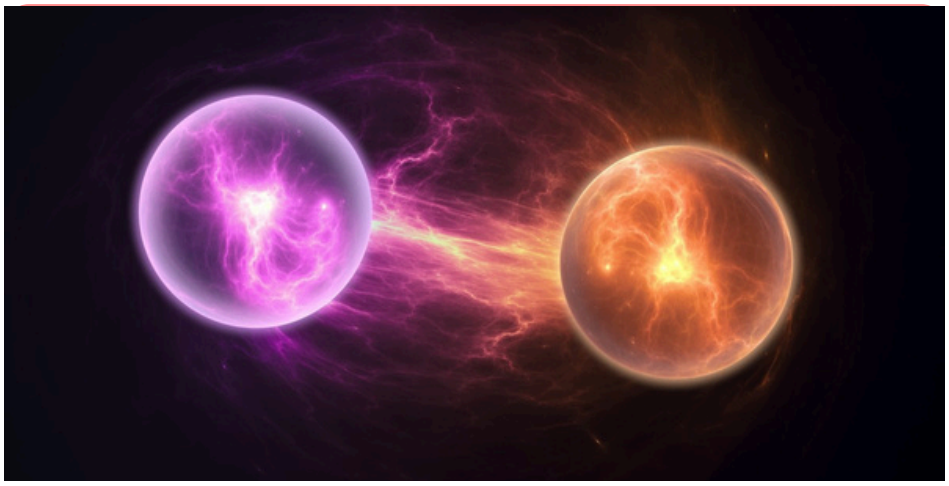
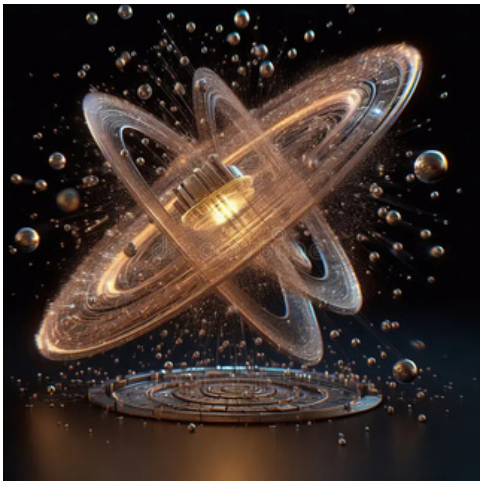
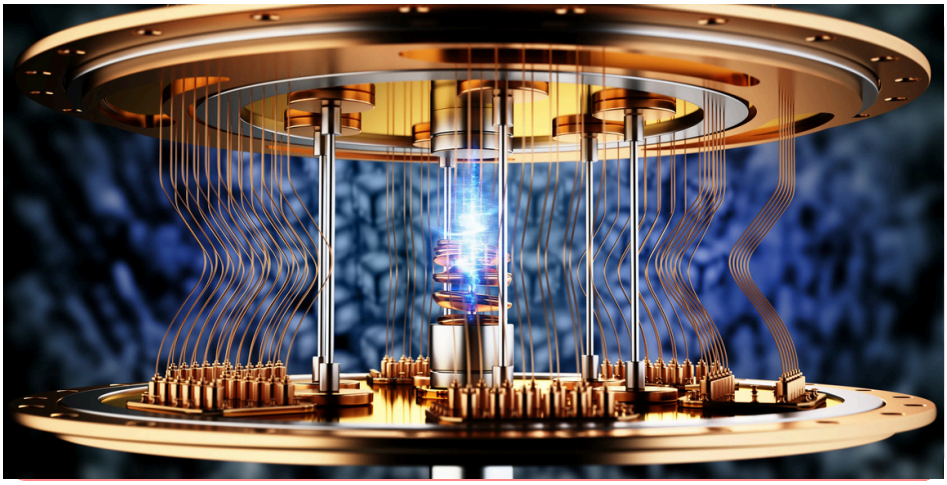
Department Of CSE

Byte Quest
Issue 168

29 Mar 2025







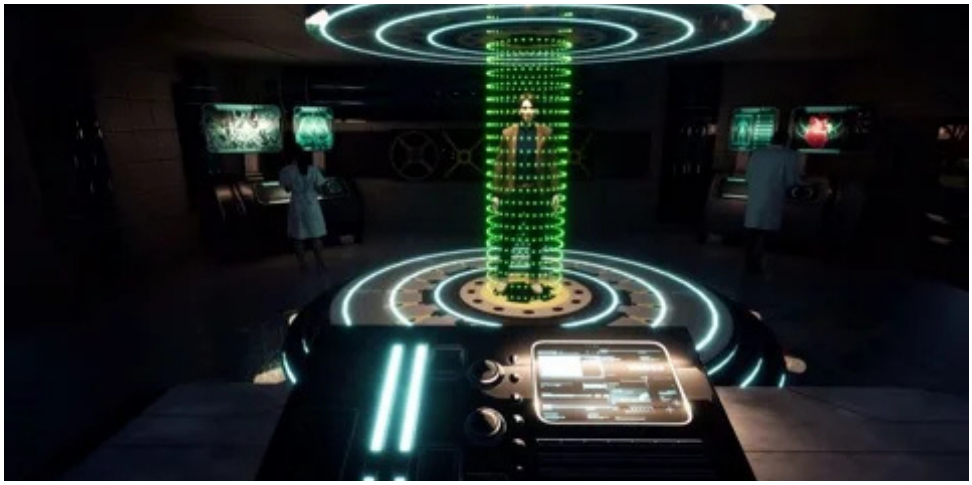
Department Vision

To be a center for academic excellence in the field of Computer Science and Engineering education to enable graduates to be ethical and competent professionals.

Department Mission

To enable students to develop logic and problem solving approach that will help build their careers in the innovative field of computing and provide creative solutions for the benefit of society.

Faculty Coordinators Dr. Bhargavi Peddireddy(Asc. Prof.) S. Komal Kaur(Asst. Prof.)
Student Coordinators: B.Vishal (1602 - 22 - 733 - 062), **Sayyad Qamar** (1602 - 22 - 733 - 050)



Quantum teleportation, once a theoretical concept, has recently achieved remarkable milestones, propelling the field of **distributed quantum computing** into new realms of possibility. In a groundbreaking experiment, scientists at the **University of Oxford** successfully transmitted a **quantum algorithm** between two separate quantum processors without physical connection, utilizing the phenomenon of **quantum entanglement**. This achievement not only demonstrates the feasibility of linking quantum processors **wirelessly** but also suggests a scalable approach to building more powerful quantum systems by integrating multiple modules.

The implications of such advancements are profound. By enabling quantum processors to communicate without direct interaction, we move closer to realizing a **quantum internet**—a network where information is transmitted securely and instantaneously across vast distances. This could revolutionize fields that rely on secure data transmission, such as finance and national security, by providing **encryption methods** that are theoretically impervious to hacking. Moreover, **distributed quantum computing** allows for the pooling of computational resources, tackling complex problems that are currently beyond the reach of classical computers.

However, significant challenges remain. Maintaining the delicate state of entanglement over long distances is fraught with difficulties, as quantum states are highly susceptible to environmental disturbances. Recent experiments have made strides in this area; for instance, researchers have achieved quantum teleportation over a **44-kilometer fiber-optic network** with over **90% accuracy**, marking a substantial step toward practical long-distance quantum communication.

The race to harness quantum teleportation for distributed computing is intensifying globally. **China**, for example, has made notable progress with its "**Wukong**" quantum computer, which has attracted over **20 million remote visits** from researchers worldwide. This highlights the international effort to develop quantum technologies that can operate collaboratively across borders, potentially leading to a new era of scientific discovery and technological innovation.

As we stand on the cusp of this **quantum revolution**, it is imperative to consider the broader societal and ethical implications. The deployment of **distributed quantum computing networks** could redefine data privacy, cybersecurity, and the very fabric of our digital infrastructure. Ensuring that these powerful technologies are developed responsibly, with equitable access and robust safeguards, will be crucial in shaping a future where the benefits of quantum advancements are shared universally.