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India to accelerate scientific discoveries with quantum computing-led R&D

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Unveils Quantum Computing Applications Lab in collaboration with Amazon Web Services (AWS) to enable advances in manufacturing, healthcare, agriculture, and aerospace engineering



India's Ministry of Electronics and Information Technology (MeitY) announced on Jan 20, 2021 that it will establish a Quantum Computing Applications Lab, in collaboration with Amazon Web Services (AWS), to accelerate quantum computing-led research and development and enable new scientific discoveries. Core mission of MeitY is to identify and deploy technologies to promote innovation and discovery tohelp India advance, and achieve a more sustainable future.

The MeitY Quantum Computing Applications Lab will provide quantum computing as a service to government ministries and departments, researchers, scientists, academia, and developers. It will enable advances in manufacturing, healthcare, agriculture, and aerospace engineering.

AWS will provide hosting with technical and programmatic support for the Lab. The MeitY initiative aims to provide scientific, academic, and developer communities access to a quantum computing development environment aligned with the government's science and technology priorities.

Quantum computing is an emerging field that harnesses the laws of quantum mechanics to build powerful tools to process information. It has the potential to solve computational problems that are beyond the reach of classical computers and lead to breakthroughs that can transform chemical engineering, material science, drug discovery, financial portfolio optimisation, machine learning, and much more.

The MeitYQuantum Computing Applications Lab will identify quantum computing problem statements for experimentation from among central and state governments, research institutions, and academia. It will work with subject matter experts from the government sector to define the problem statements, and make them public, inviting applications from researchers, academia, and organisations to address them. The lab will then provide select applicants with free access to quantum computing hardware, simulators, and programming tools, on-demand. This will help scientists and developers to build algorithms, conduct advanced simulations, and run experiments.

Amazon Braket provides a development environment to enable users to explore and design quantum algorithms, test and troubleshoot them on simulated quantum computers, and run them on different quantum hardware technologies.

Dr.Rajendra Kumar, Additional Secretary, MeitY, said "The MeitY Quantum Computing Applications Lab is the first of its kind initiative in the world and aims to enable India's talented researchers to explore the unchartered applications of quantum computing, and pave the way for discoveries and disruptions,.

A core mission of MeitY is to identify and deploy technologies to promote innovation and discovery to help India advance and achieve a more sustainable future. Quantum computing has the potential to help countries leapfrog technology generations, achieve scientific leadership, and deliver answers to complex economic and social challenges. This initiative will augment India's ongoing efforts in developing quantum computing applications, the President and CEO of the National e-Governance Division (NeGD), Abhishek Singh, explained.

The MeitY Quantum Computing Applications Lab will help government bodies and the scientific community to identify problems and opportunities rapidly, and test real-world challenges through experiments and prototypes in a low-risk environment. Outcomes from these experiments will help researchers evolve the problem statements, proofs-of-concept, and prototypes that will lead to the development of new applications, models, and frameworks in quantum computing.