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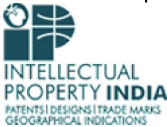(http://ipindia.nic.in/ind

Patent Search

Invention Title	Mobile-Based 3D Quantum Circuit Simulator and Visualization System
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Abstract:

The invention relates to a mobile-based quantum learning and visualization system configured to enable users to construct quantum circuits and observe real-time quantum state evolution without programming or mathematical expertise. The system comprises a gesture-based circuit-building interface, a quantum state computation engine, a visualization module that renders qubit transformations on 2D and 3D Bloch spheres. The system further includes a guided-learning module that provides contextual explanations, stepwise tutorials, and correctness feedback. Quantum operations are computed and animated in real time, allowing users to intuitively understand superpo rotations, phase shifts, and measurement collapse. The invention provides an accessible, interactive, and pedagogically effective platform for beginners learning quantum computing on mobile devices.

Complete Specification

Description:FIELD OF THE INVENTION

[001] The present invention relates to the field of quantum computing education, simulation technology, and visualization systems. More particularly, the invention perta to a mobile-based quantum learning platform designed to model, simulate, and visually represent quantum circuits and qubit state evolutions in an interactive environment. The invention further relates to systems and methods for generating 2D and 3D Bloch sphere visualizations, performing real-time quantum state computations, and enabling intuitive circuit construction on handheld devices to facilitate beginner-friendly quantum computing education without requiring prior programming or mathematical expertise.

BACKGROUND OF THE INVENTION

[002] Quantum computing is an emerging technological field that promises exponential computational advantages over classical systems; however, its adoption is hinde by steep learning curves, abstract mathematical foundations, and the lack of intuitive visualization tools accessible to beginners. Existing quantum-education platforms typically require learners to possess knowledge of Python, Qiskit, quantum gates, and linear algebra before they can meaningfully engage with quantum circuit design or state evolution. This creates a barrier for students, hobbyists, and early-stage learners who wish to explore quantum concepts without advanced technical backgrounds.

View Application Status

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