

QuaSim: An Interactive Quantum Cryptography Learning Tool

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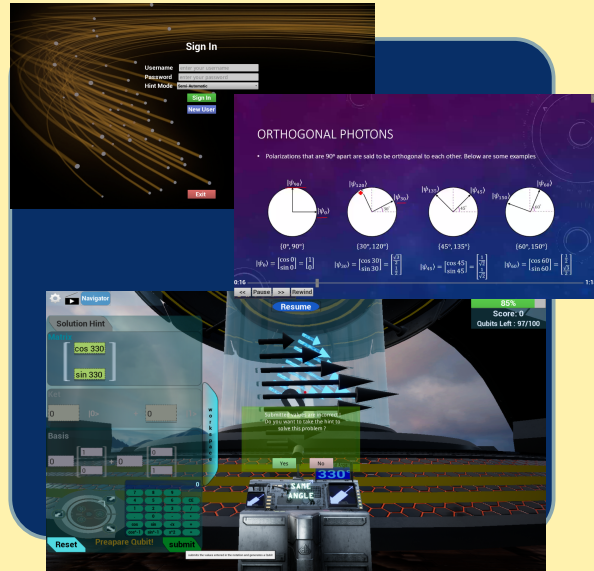
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The QuaSim project aims to replace or supplement traditional lecture-based educational methods with an interactive virtual environment in which students learn about the core principles of Quantum Cryptography.

The Challenges

- Traditional lectures have shortcomings that result in linear, fragmented learning that doesn't give a holistic understanding.
- Quantum cryptography is usually taught in a lecture format due to its complexity.
- The expensive equipment required for quantum cryptography makes hands-on learning extremely difficult.

- QuaSim places students in various situations that illustrate how different portions of the Quantum Cryptography process work.
- Introductory videos help to inform the students about the concepts each level is focused on.



Approach

- Build an intelligent system that identifies student abilities and adapts to individual learner abilities to create appropriate instructional profiles
- Build a modular, interactive system that allows students to focus on the sections of quantum cryptography they struggle with.



QuaSim built in Unreal Engine 4 Game platform

- 6 levels that focus on polarization, bases, superposition, measurement, and the BB84 protocol with and without interception.
- Multiplayer functionality for the BB84 focused levels.
- Assessment methodology and tools
- Education Libraries and components: Lesson plans, outcomes, student failure models, adaptation for learning targets

Interested in meeting the PIs? Attach post-it note below!



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