Chung-Hung Kuo

Educations

2019 – Present   **National Tsing Hua University (NTHU), Taiwan**, *Master of Science in Computer Science*.

2015 – 2019   **National Tsing Hua University (NTHU), Taiwan**, *Bachelor degree in Interdisciplinary Program of Nuclear Science (IPNS)*.

Research Interests

Quantum network, quantum applications, quantum key distrbution.

Publications

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Working Experience

September 2019 – Present   Research Assistant, Networking and Multimedia System Lab, Department of Computer Science, NTHU

Research Experience

Quantum Network and its Simulators.

The quantum network has recently attracted a lot of attention and is now being developed at a rapid pace. The quantum network architecture can divide into two types: (i) vertically layered protocol stacks: the layered architectures of quantum repeater network. (ii) horizontally group communications between different nodes. We survey several proposed protocols. These protocols have different network capability e.g. error tolerance, transport rate etc. In the second task, we survey the quantum simulators. The theoretical analysis of networks using mathematical in a large number of nodes and links is a hard process since the mathematical constructs become too complex for realistic considerations. The real experiment is also expensive and hard to scalable. Simulators are often simulated to create the networks which allow researchers to experiment. Researchers are easy to modify the variables and get the performance in the proposed idea. The simulators can be divided into quantum computing and quantum network simulators. We compare some famous quantum computing simulators, and compare quantum network simulators, too. We give a sample usage on SimulaQron, one of the quantum network simulators.

Quantum Key Distribution with OpenSSL.

OpenSSL is a application that secure communications over computer networks However, current OpenSSL supporting public-key cryptography w.g., RSA, Diffie–Hellman key exchange will be break by quantum computing because it's good at prime factorization. Quantum key distribution (QKD) is the quantum network application and promises a secure key agreement by using quantum mechanical systems. QKD can be used as the key-exchange protocol in OpenSSL. We study how to use it in OpenSSL.